



## MR-2320 SERIES

Pre-Action/Deluge and Agent Release Control Panel

# INSTALLATION & OPERATION MANUAL

*Revision 2*  
**Document #: LT-951SEC**

**WARNING:** This manual contains information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer. The entire manual should be read carefully.



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# Industry Canada and FCC Notice

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## Notice for all MR-2320 Series Built-In UDACTs Sold in Canada

Secutron's **MR-2320 SERIES BUILT-IN UDACT Communicator** described in this manual is listed by Underwriters Laboratories Canada (ULC) for use in slave application in conjunction with a Listed MR-2320 series Pre-action/Deluge and Agent Release Control Panel under Standard ULC-S527 (Standard for Control Units for Fire Alarm Systems) and ULC/ORD-C693-1994 (Central Station Fire Protective Signalling Systems and Services). These Communicators should be installed in accordance with this manual; the Canadian / Provincial / Local Electrical Code; and/or the local Authority Having Jurisdiction (AHJ).

### Industry Canada Notice

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alteration made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the **Earth Ground** connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This is necessary both for proper operation and for protection.



**CAUTION:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate

## Notice for all MR-2320 Series Built-in UDACTs Sold in the U.S.A.



**Note:** The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

The REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

Secutron's **MR-2320 SERIES BUILT-IN UDACT Digital Communicator** described in this manual is listed by Underwriters Laboratories Inc. (ULI) for use in slave application in conjunction with a listed Pre-action/Deluge and Agent Release Control Panel under Standard 864 (Control Units for Fire Protective Signalling Systems). These Communicators comply with the National Fire Protection Association (NFPA) performance requirements for DACTs and should be installed in accordance with NFPA 72 Chapter 4 (Supervising Station Fire Alarm System). These Communicators should be installed in accordance with this manual; the National Electrical Code (NFPA 70); and/or the local Authority Having Jurisdiction (AHJ).

### FCC Notice

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the telco transformer of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company. This equipment is capable of seizing the line. This capability is provided in the hardware.

**Type of Service:** The **Communicator** is designed to be used on standard device telephone lines. It connects to the telephone line by means of a standard jack called the USOC RJ-11C (or USOC FJ45S). Connection to telephone company provided coin service (central office implemented systems) is prohibited. Connection to party lines service is subject to state tariffs.

**Telephone Company Procedures:** The goal of the telephone company is to provide you with the best service it can. In order to do this, it may occasionally be necessary for them to make changes in their equipment, operations or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice, in writing, to allow you to make any changes necessary to maintain uninterrupted service.

In certain circumstances, it may be necessary for the telephone company to request information from you concerning the equipment which you have connected to your telephone line. Upon request of the telephone company, provide the FCC registration number and the ringer equivalence number (REN); both of these items are listed on the equipment label. The sum of all of the REN's on your telephone lines should be less than five in order to assure proper service from the telephone company. In some cases, a sum of five may not be usable on a given line.

**If Problems Arise:** If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line, as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of this disconnection. If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC. Contact your telephone company if you have any questions about your phone line. In the event repairs are ever needed on the Communicator, they should be performed by Secutron Inc. or an authorized representative of Secutron Inc. For information contact Secutron Inc. at the address and phone numbers shown on the back page of this document.

# Introduction

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Secutron's MR-2320 Series Pre-Action/Deluge and Agent Release Control Panel performs the function of fire suppression in a wide variety of applications. It is capable of being used in an agent release sprinkler system or in a pre-action or deluge sprinkler system. It can be used in single-hazard or dual-hazard applications with or without cross-zoning. The panel includes common alarm, supervisory, and trouble relays, and provides regulated and unregulated auxiliary power along with four-wire smoke power. It supports auxiliary relays and a city tie module. The auxiliary relays are based on a hazard area status. The MR-2320 has six input zones and four output zones, allowing for flexibility in most single- and dual-hazard applications for both deluge and agent releasing applications.

## Panel Type

The panel can function as an agent release panel or as a pre-action/deluge panel, depending on which of the available fixed configurations are chosen from the main programming menu.

### Deluge sprinkler system

In deluge sprinkler system open-valve sprinkler heads terminate to a water supply that is controlled by a single valve. When the system detects fire, it automatically opens the valve via a releasing circuit, allowing the water to flow through all the sprinkler heads. Deluge sprinkler systems are useful for applications in which simultaneous discharge of water through every sprinkler is required.

### Pre-action sprinkler system

In a pre-action sprinkler system close-valve sprinkler heads are connected to pipes that are supervised for air pressure. The pipes terminate directly to a water supply. Pre-action systems are useful for applications in which the prevention of an accidental discharge of water is required.

### Agent release system

In an agent release system, an extinguishing agent (such as Argon, dry chemical, CO<sup>2</sup>, Halon, etc.) is automatically released upon fire detection. An abort function is added to prevent the false release of the extinguishing agent.

## Overall Features

- Basic unit has six Class B (Style B) initiating circuits, which may be configured as Class A (Style D) using input Class A converter adder modules. Each initiating circuit is pre-configured as Alarm, Supervisory (Latching or non-latching), water-flow, Manual Release Switch, Abort Switch or Manual Release/Abort combination, depending upon the selected pre-programmed configuration. There are two LEDs per circuit, one for Trouble (amber), and one dual color (amber/red) LED for Supervisory (amber) and Alarm (red).
- Basic unit has 4 power limited class B (style Y) output circuits. Output circuits 1 & 2 are indicating circuits while output circuits 3 & 4 are releasing circuits (circuit 4 can work as an indicating circuit in some situations; check the *Pre-Programming Modes* section on page for details). Each indicating circuit process type is pre-configured and can be silenceable. The signal rates depend on the selected pre-programmed configuration.
- A pushbutton associated with each initiating, indicating and releasing circuit can individually bypass the circuit.
- Configurable Signal Silence Inhibit and Auto Signal Silence Timers.
- Subsequent Alarm, Supervisory, and Trouble operation.
- Four wire reset-able smoke power supply: 22.3V DC regulated, 300mA maximum.
- Relay Contacts for Common Alarm, Common Supervisory, Common Trouble, and Auxiliary Alarm Relay (disconnectable).
- RS-485 Interface for MR-2300 Series Remote Multiplex Annunciators and Smart relay Module.
- Optional Modules for additional Relay Circuits, City Tie and Polarity Reversal Signaling.
- Extensive transient protection.
- Easy configuration of the panel using LCD service tool (CFG-300).
- Releasing circuit protection from false alarm by disconnecting the battery if the voltage falls below 19V.

# Conventions

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## Circuits

Refers to an actual electrical interface for initiating (detection), indicating (signal), and releasing.

## Zone

Is a logical concept for a Fire Alarm Protected Area, and will consist of at least one Circuit.

Often the terms Zone and Circuit are used interchangeably, but in this Manual the term Circuit is used.

## Display Points

There is a display point associated with every initiating and indicating circuit of the MR-2320 LED Series fire panel. For an initiating circuit there are two LEDs for every display point: one single color (amber) and one dual color (red/amber). For an indicating circuit there is only one LED: one single color (amber), for every display point.

## Wiring Styles

Initiating and indicating circuits are Class B (Style B and Y). Changing the initiating circuits to Class A requires an MR-2300-A adder board which will convert SIX initiating zones from Class B (Style B) circuits to Class A (Style D). This is done without penalizing the number of circuits, which remains the same as in Class B (Style B). Changing the indicating circuits to Class A requires an MR-2300-NC2 adder board, which will convert TWO indicating zones from Class B (Style Y) circuits to Class A (Style Z). Releasing circuits (Z) are Class B (Style B) only.

# System Components

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## Main Pre-Action/Deluge and Agent Release Control Panel

Model	Description
MR-2320-R	<p>Six Zone Pre-Action/Deluge and Agent Release Control Panel with LED display (red or white door, black box), six Class B (Style B) initiating circuits, and four Class B (Style Y) output circuits. Output circuits 1 &amp; 2 are Class B (Style B) indicating circuits that can be converted to Class A (Style Z) using an <b>MR-2300-NC2 Output Class A Converter</b> adder module. Output circuits 3 &amp; 4 are Class B (Style B) only releasing circuits. Each output circuit can draw 1.7A current, 5A total. A six zone <b>MR-2300-A Input Class A Converter</b> adder module may be used for Class A (Style D) wiring of Initiating circuits. MR-2320 contains Common Alarm, Common Supervisory &amp; Common Trouble Relays, auxiliary alarm relay (disconnectable), an RS-485 Interface for Remote Annunciators and a Resettable Four Wire Smoke Detector Power Supply. Two batteries are required.</p>
MR-2320-DR	Same as above except with dialer.

## Relay Modules: Six Relays

Model	Description
MR-2306-R6	Six-relay adder module

## Polarity Reversal/City Tie

Model	Description
MR-2300-PR	Polarity Reversal and/or City Tie Module

## Smart Relay Module

Model	Description
MR-2312-SW12	Smart Relay Module (12 relays) with white enclosure
MR-2312-SR12	Smart Relay Module (12 relays) with red enclosure

MR-2300 SERIES REMOTE RELAY

SECUTRON™  
Fire Alarm Systems™

## Input Class A Converter: Six Circuits

Model	Description
MR-2300-A	Input Class A converter Module (six circuits). This module has built-in active EOL resistors.

## Output Class A Converter: Two Circuits

Model	Description
MR-2300-NC2	Output Class A converter module (two circuits)

## MR-2312-ATW Remote Annunciator

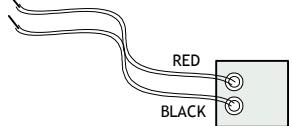
Model	Description
MR-2312-ATW	16 Zone remote annunciator

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Fire Alarm Systems™

FIRE ALARM ANNUNCIATOR

## Active end-of-line

The ELRX-400R(W) are power-saving End-of-Line resistors that eliminate the need for an additional battery cabinet or larger batteries in order to meet the 60 hour standby requirement.

	Model	Description
	ELRX-400	Active end-of-line resistor without plate
	ELRX-400R	Active end-of-line resistor with end-of-line red plate

## Additional System Accessories

- Model: **MR-2306-ATR/W** Eight Zone Remote Annunciator (ULC and ULI Approved)
- Model: **MR-2300T** Remote Trouble Indicator (ULC and ULI Approved)
- Model: **MP-300** EOL resistor plate, 3.9KΩ (ULC and ULI Approved)
- Model: **MP-300R** EOL resistor plate, red (ULC Approved)
- Model: **BC-160** External Battery Cabinet (ULC and ULI Approved)
- Model: **MP-1500R/W** Current Limiter
- Model: **MP-320R/W** Solenoid EOL Module
- Model: **MR-2316-AT** Remote Annunciator

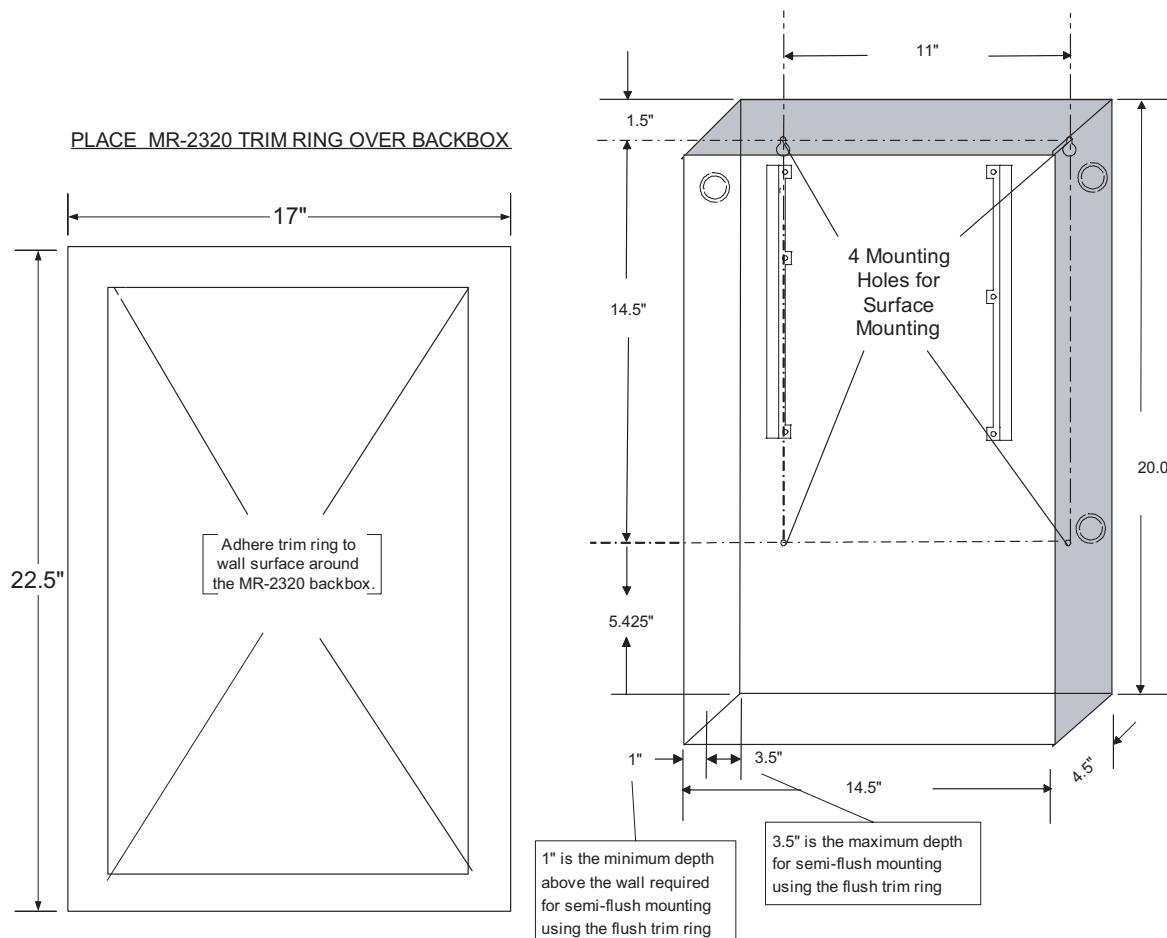
# Mechanical Installation

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## Installing the Enclosure

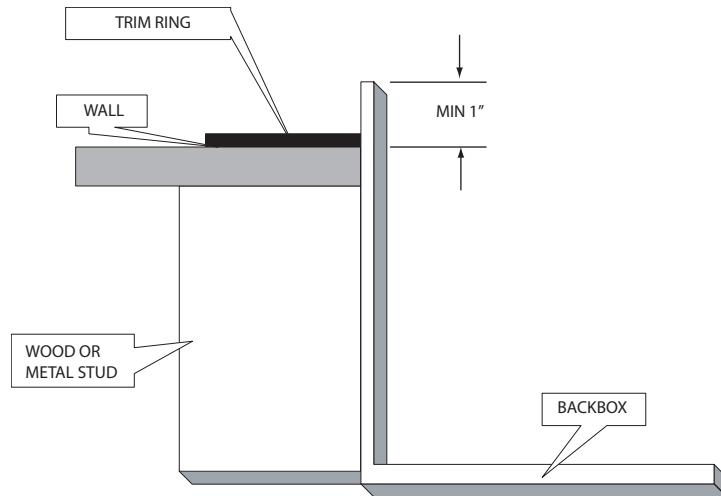
Install the MR-2320 Series panel enclosure as shown below. Mount enclosure surface mount using the four mounting holes with the provided screws.

**Figure 1: Box dimensions, semi-flush mounting and trim ring**



Remove the door (also disconnect the ground strap), the dead front and semi-flush mount the backbox into the wall. Peel the adhesive cover from the trim ring and stick to the wall surface around the backbox, after wall is finished.

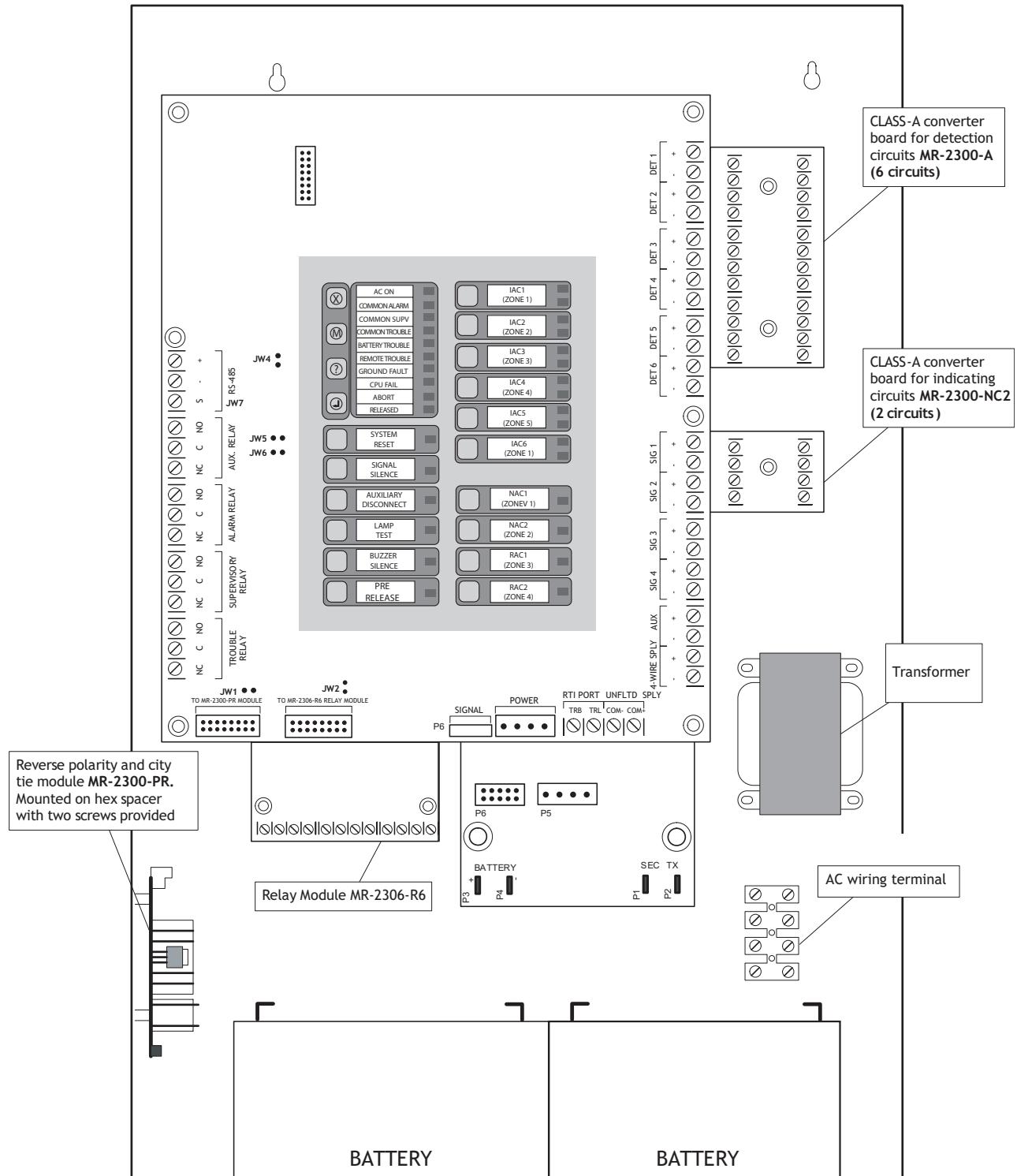
The figure below shows a cross-section of the semi-flush mounted backbox and the trim ring. Make sure to **allow a minimum depth of 1" above the wall surface** for proper door opening.



## Installing the Adder Modules

The MR-2320 Series panel comes pre-assembled with all components and boards except for adder modules. Module installation locations are shown below. Refer to *Figure 3* on the next page for Jumper or DIP Switch settings and see *Wiring Tables and Information* on page 23 for wiring specifications.

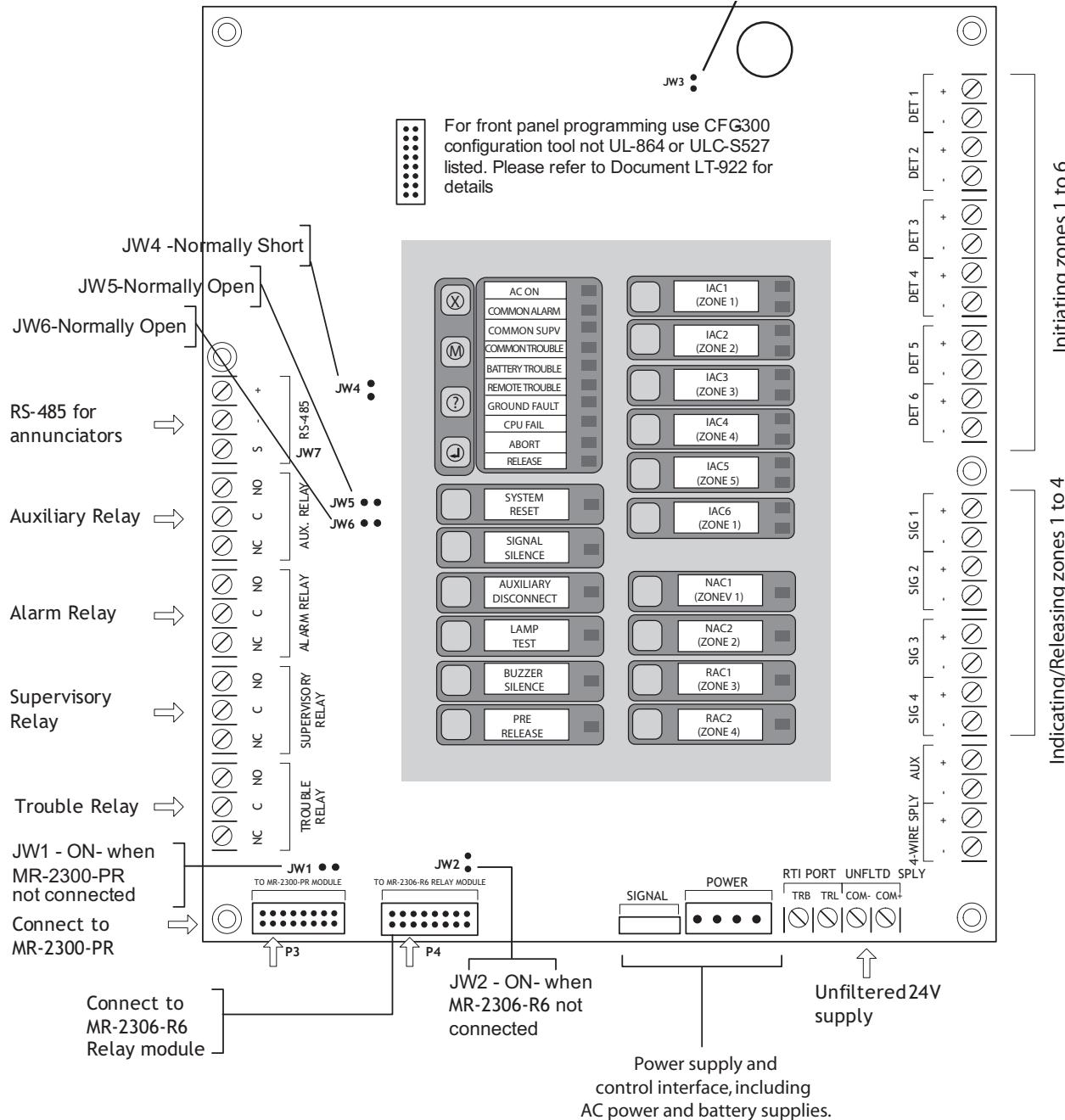
**Figure 2: Installation of Adder Modules**



# Cable and Jumper Connections for Main Board and Adder Modules

## Main Pre-Action/Deluge and Agent Release Control Board

**Figure 3: Main Control Board cable connector and jumper settings**

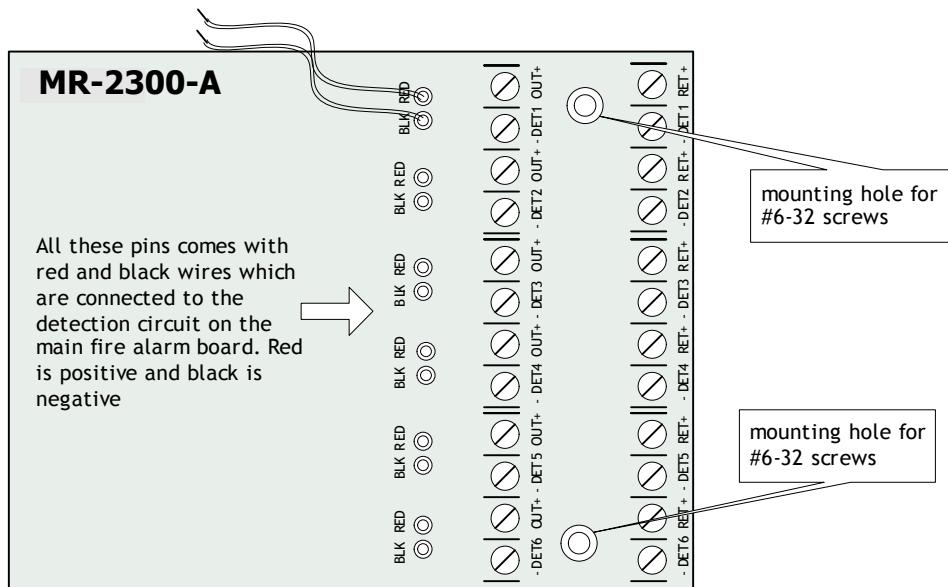


**Table 1: Connectors and Jumpers on the Main Fire Alarm Board**

JW1	Remove this jumper if MR-2300-PR is connected.
P4	Cable from connector <b>P1</b> of the <b>MR-2306-R6 Relay Adder Module</b> connects here. Otherwise not used.
JW2	Remove this jumper if an <b>MR-2306-R6 Relay Adder Module</b> is used.
JW3	Removed all the time.
JW4	Normally short.
JW5	Normally open. Place jumper here and power down the panel (both AC power and batteries). Then power up the panel again, the password is restored to the default after system startup. Once the system has reset, <b>REMOVE</b> the jumper from the pins at JW5. Leave normally open.
JW6	Normally open to BLOCK configuration via modem, PC with a UIMA converter module or a CFG-300 Configuration Tool. Place jumper here to ALLOW any type of configuration.

**MR-2300-A Input Class-A Converter Adder Module**

**Figure 4: MR-2300-A Input Class-A Converter Adder Module**

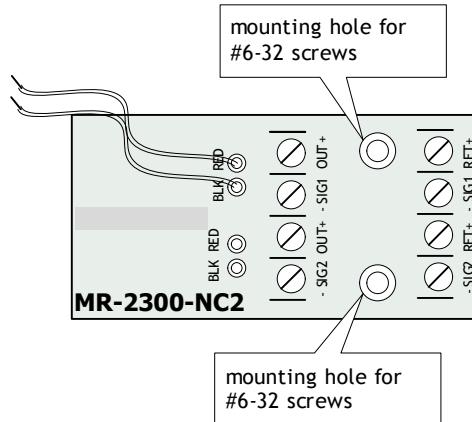


There are no jumpers or cables to set on this module, just wiring from the converter (wires are fixed here) to the Main Fire Alarm Board.

Initiating circuits must be wired from the MR-2300-A module to the Main Fire Alarm board. For example, Initiating circuit 1 positive (red) and negative (black) wires are connected to the positive and negative terminals (respectively) of Initiating circuit 1 on the Main Fire Alarm Board. From the MR-2300-A converter Initiating circuits are wired out to the devices from the positive and negative terminals marked DET OUT and the circuit return wires are brought back to the converter module to positive and negative terminals marked DET RET.

## MR-2300-NC2 Output Class-A Converter Adder Module

**Figure 5: MR-2300-NC2 Output Class-A Converter Adder Module**



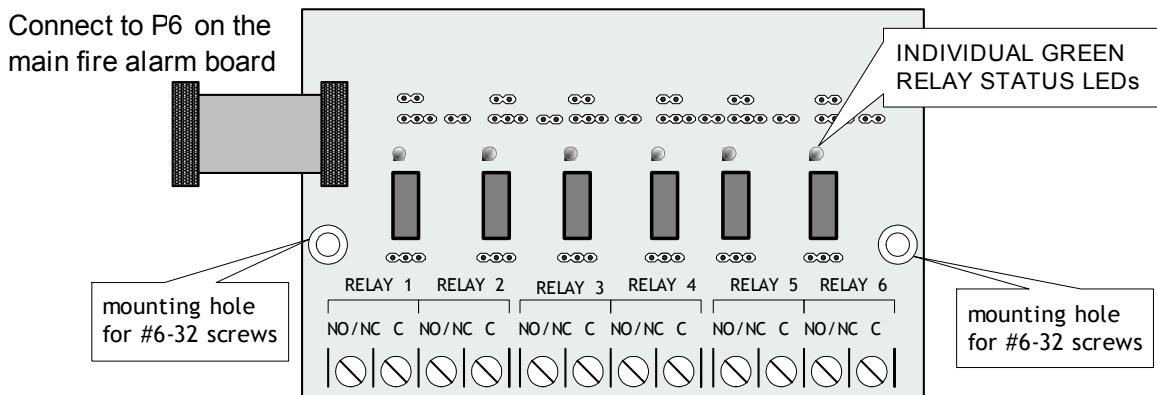
Indicating circuits must be wired from the MR-2300-NC2 to the main Fire Alarm board. For example indicating circuit 1 positive (red wire) and negative (black wire) is wired from the Class A converter module to the positive and negative terminals of Indicating circuit 1 on the Main Fire Alarm board.

The actual indicating zone is wired from the SIGNAL OUT positive and negative to the signaling devices and then wired back to the SIGNAL RET positive and negative.

### Relay Adder Module

Cable from P1 of the MR-2306-R6 is connected to P4 on the Main Fire Alarm Board. The jumpers located above each relay on the MR-2306-R6 are used to configure the relays. The jumpers located below the relays are used to select either normally open contacts or normally closed contacts.

**Figure 6: MR-2306-R6 six relay adder module**



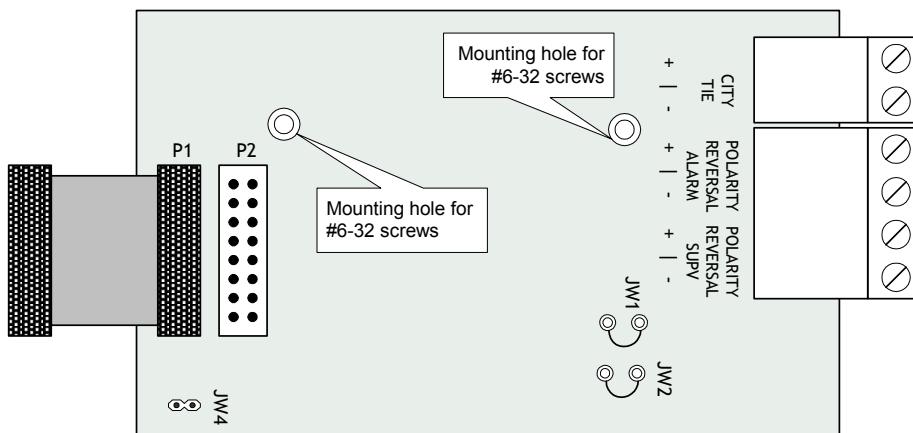
P1: Cable from MR-2306-R6 Relay Adder Module connects to P4 on Main Fire Alarm Board.

The correlation of the relays are fixed and is as follows:

	Relay1	Relay2	Relay3	Relay4	Relay5	Relay6
Active State	Hazard 1 Alert	Hazard 1 Alarm	Hazard 1 Release	Hazard 2 Alert	Hazard 2 Alarm	Hazard 2 Release

## Polarity Reversal and City Tie Module (Model MR-2300-PR)

**Figure 7: Polarity reversal and city tie module**



The following hardware configuration must be performed before installing the MR-2300-PR.

**Table 2: MR-2300-PR jumper settings**

P1	Cable connects to P5 on the <b>Main Board</b>
JW1	Cut this jumper for Trouble transmission. When this jumper is cut and a system trouble occurs, the designated terminals will transmit a "zero volts" or "open" circuit. Please note that in normal condition, the terminals polarity is read exactly as labeled on the circuit board.
JW2	Cut this jumper for Trouble transmission of supervisory. When this jumper is cut and a supervisory trouble occurs, the designated terminals will transmit a "zero volts" or "open" circuit. Please note that in normal condition, the terminals polarity is read exactly as labeled on the circuit board.

The Alarm Transmit signal to the MR-2300-PR can be programmed to turn OFF when signal silence is active. This allows the City Tie Box to be manually reset. On subsequent alarms the silenceable signals will resound and the City Tie Box will be retriggered. See configuration of *Alarm Xmit-Sil* on page for more information.

The Trouble Transmit signal to the MR-2300-PR can be programmed to delay AC power fail for 0, 1 or 3 hours if this is the only system trouble. See *Pwr Fail Dly Tmr* configuration on page for more information.

# Field Wiring

## Main Board Field Wiring

Wire devices to the terminals as shown in the figures that follow. Refer to *Wiring Tables and Information* on page 23 for wire gauges and *Appendix D* on page 80 for specifications.

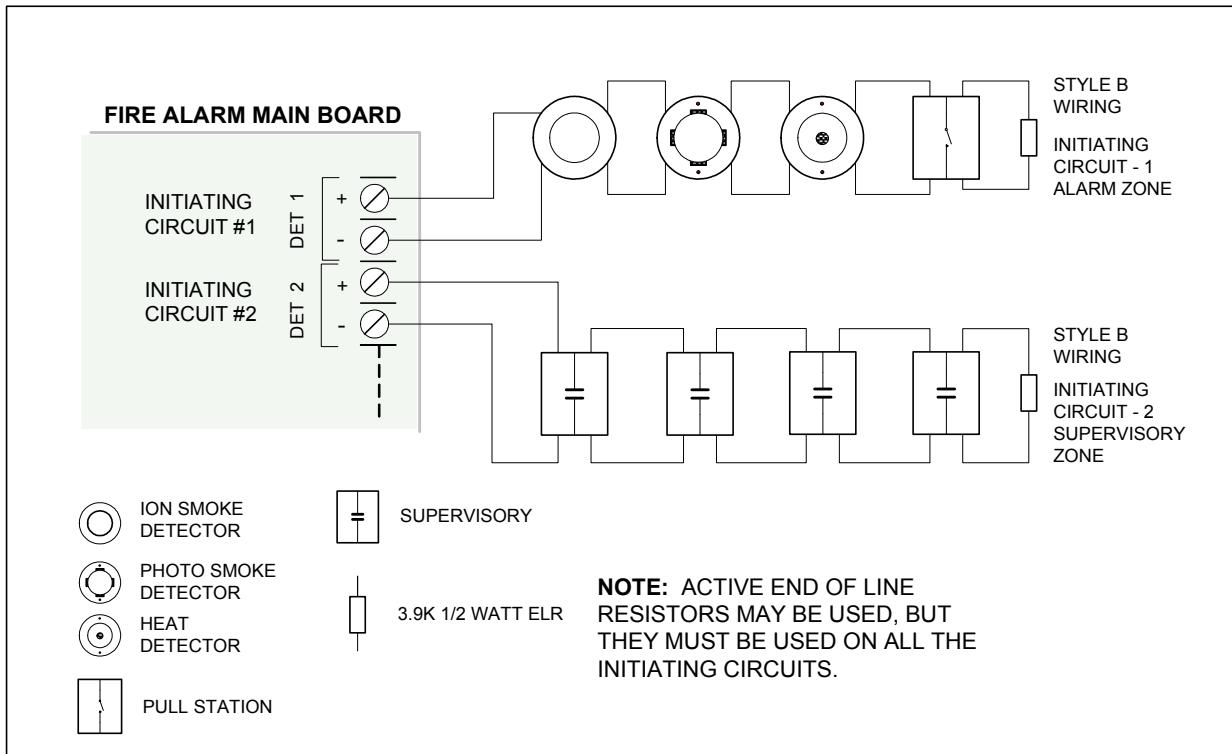


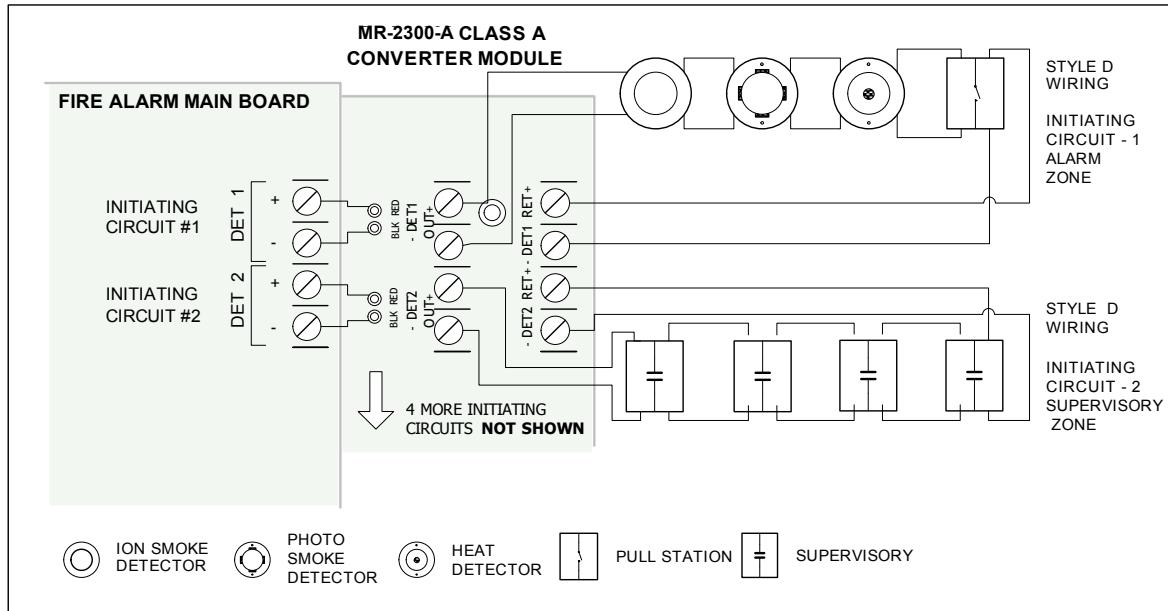
**CAUTION:** Do not exceed power supply ratings.

### Initiating Circuit Wiring

Wiring diagrams for the initiating circuits are shown below. The panel supports Style B wiring for the initiating circuits and Style D wiring for the indicating circuits. The initiating circuits are supervised by a 3.9KΩ EOL resistor or an active EOL module.

**Figure 8: Initiating circuit – Class B or Style B Wiring**

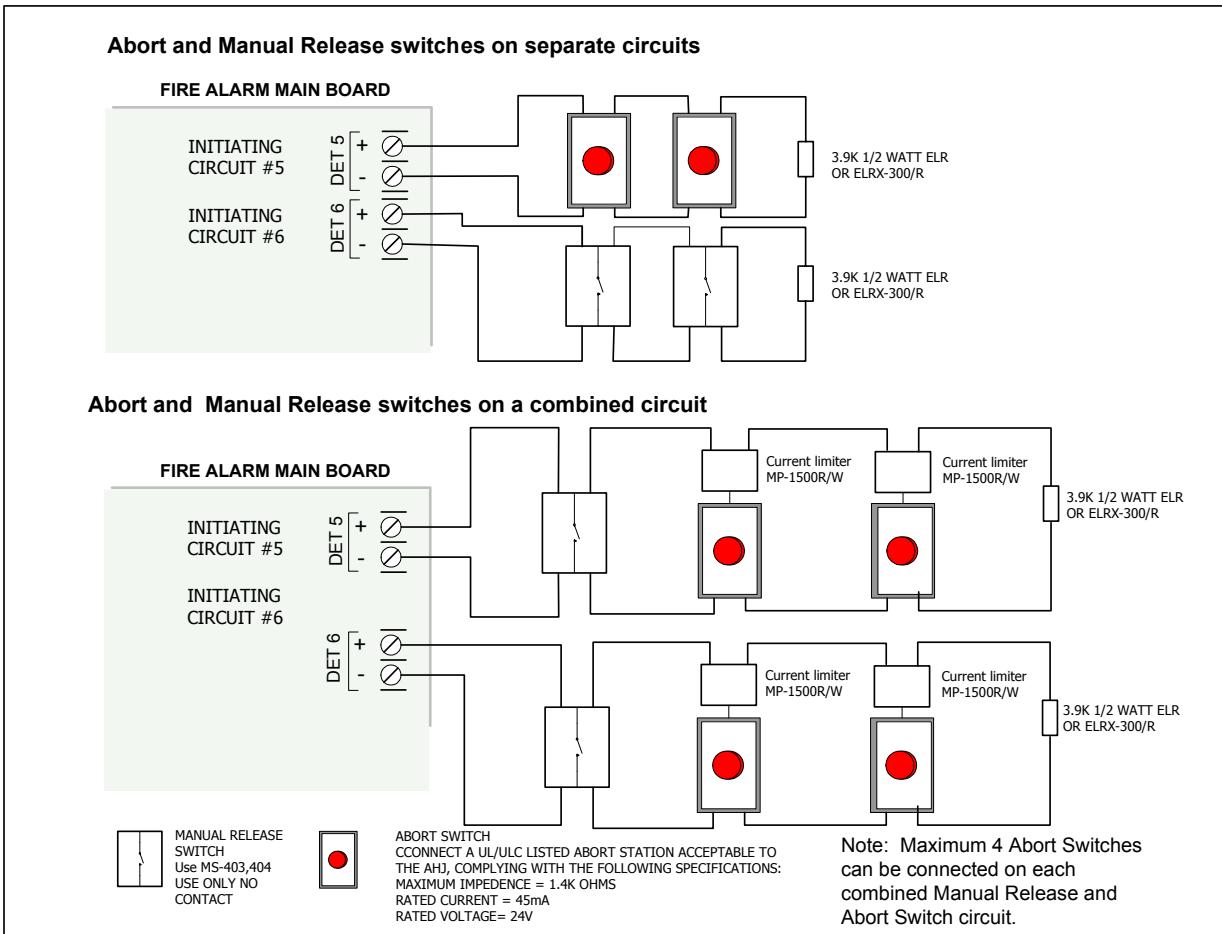


**Figure 9: Initiating circuit– Class A or Style D Wiring**

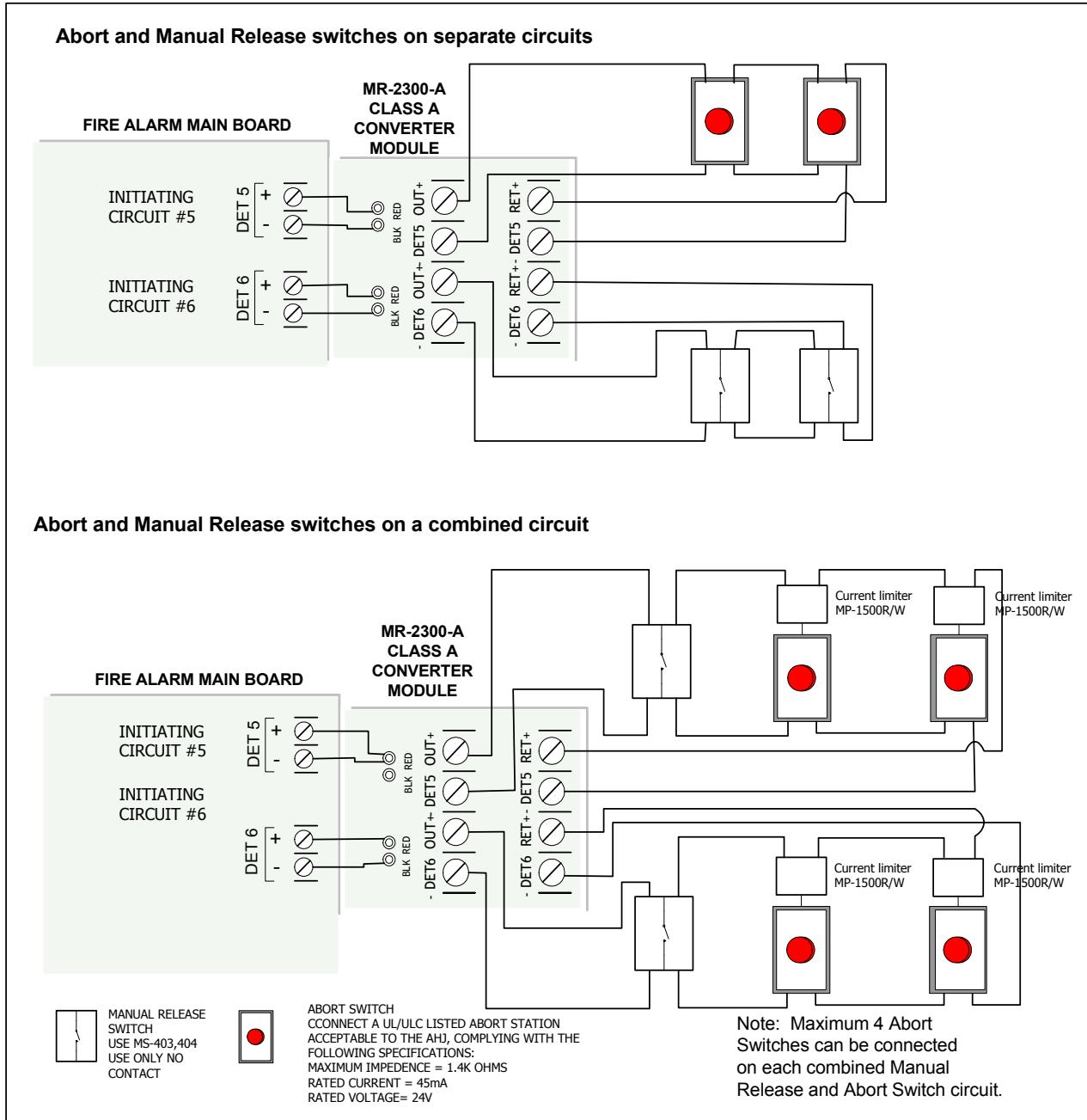
## Abort and Manual Release Switch Wiring

Wiring for the abort and manual release switches is shown in *Figures 10 and 11*. Depending on the selected mode, the Abort and Manual release switches can either be on different circuits or they both can be on the same circuit. When on separate circuits, DET5 is used for the Abort switch and DET6 is used for the manual release switch. When on the same circuit, DET 5 Abort/Manual release combination is for hazard area 1, while DET6 Abort/Manual release combination is for hazard area 2. When an Abort/Manual release combination is used, ensure that the Manual release switch is always before the Abort switch. Also ensure that there is a current limiting resistor (MP-1500R/W) between the Manual release and Abort switch for differentiating between the two switches.

**Figure 10: Abort and Manual Release Switch Class B or Style B Wiring**



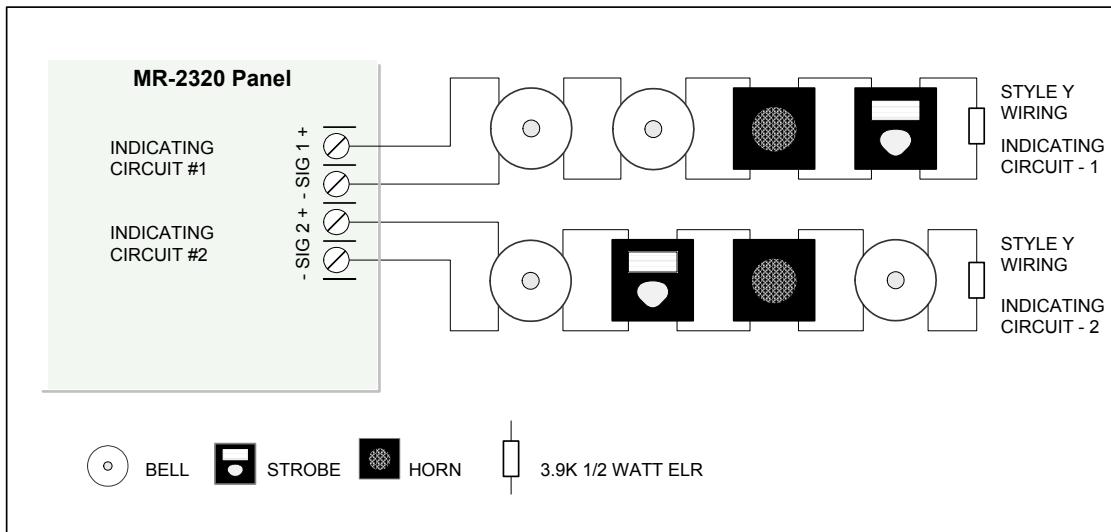
**Note:** For the circuit with the combined Abort Switch and Manual Release Switch, a maximum of four Abort Switches can be connected.

**Figure 11: Abort and Manal Release Switch Class A or Style D Wiring**

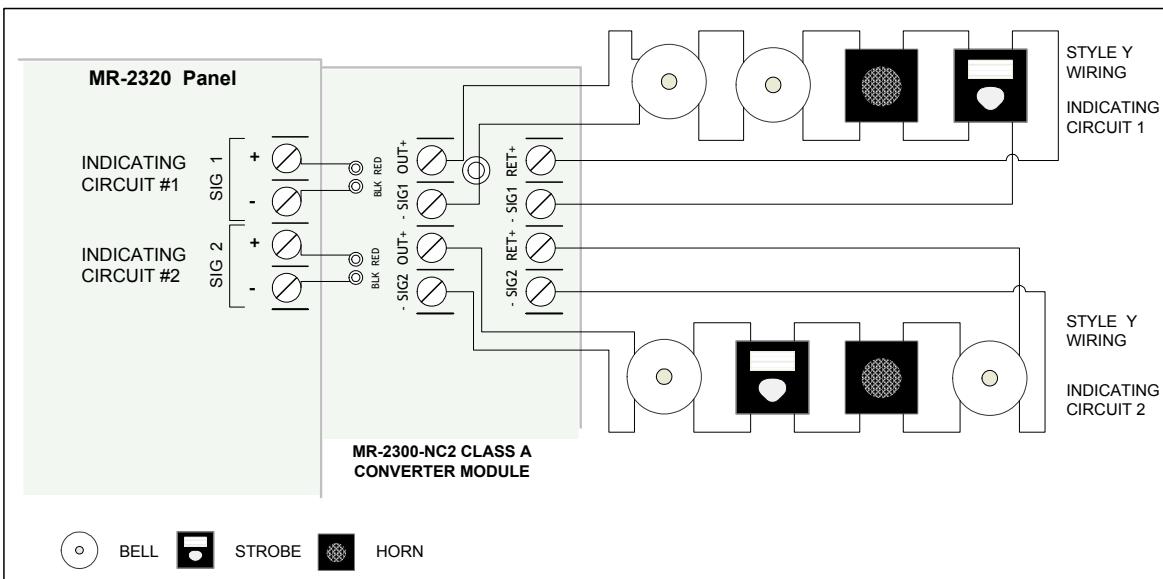
## Indicating Circuit Wiring

The MR-2320 Series Fire Alarm supports Class B or Style Y and Class A Style Z wiring for its indicating circuits. Each circuit is supervised by a  $3.9\text{K}\Omega$  EOL resistor or active EOL module. Each indicating circuit provides up to 1.7 A, 5 A maximum total if no auxiliaries are used.

**Figure 12: Indicating circuit – Class B or Style Y wiring**



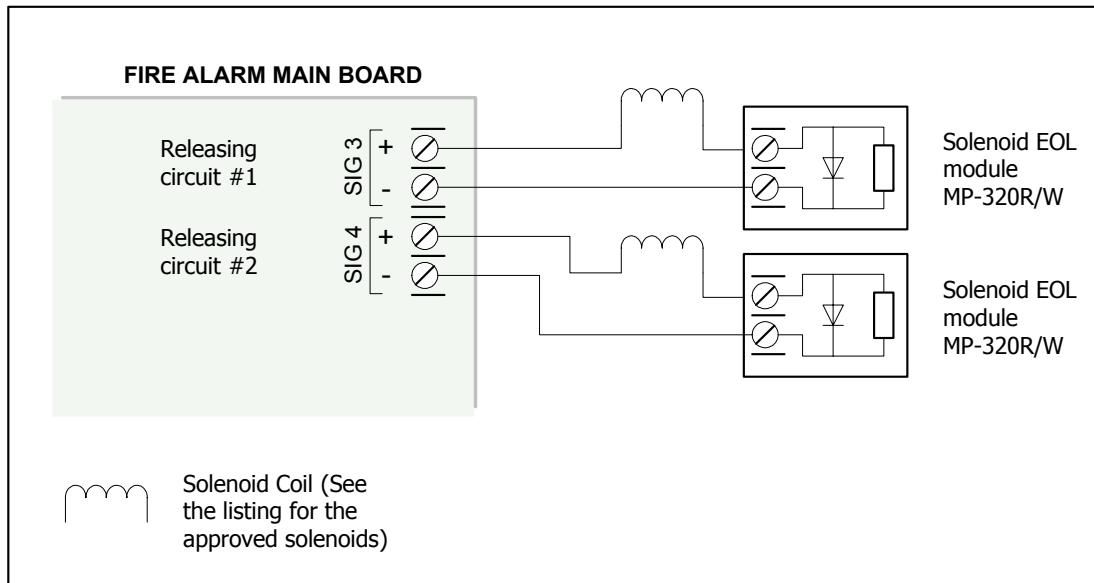
**Figure 13: Indicating circuit –Class A or Style Z wiring**



## Releasing Circuit Wiring

Wiring for the releasing circuit is shown in *Figure 14*, below. SIG3 and SIG4 output circuits are reserved for the releasing circuits. Solenoid EOL module (MP-320R/W) is used to supervise the solenoid coil. If the solenoid is already fitted with the directional diode then only the 3.9KΩ EOL resistor is used. The supervisory current passes through the solenoid coil thus confirming the integrity of the solenoid coil for open coil. The wiring is supervised for the open and short conditions.

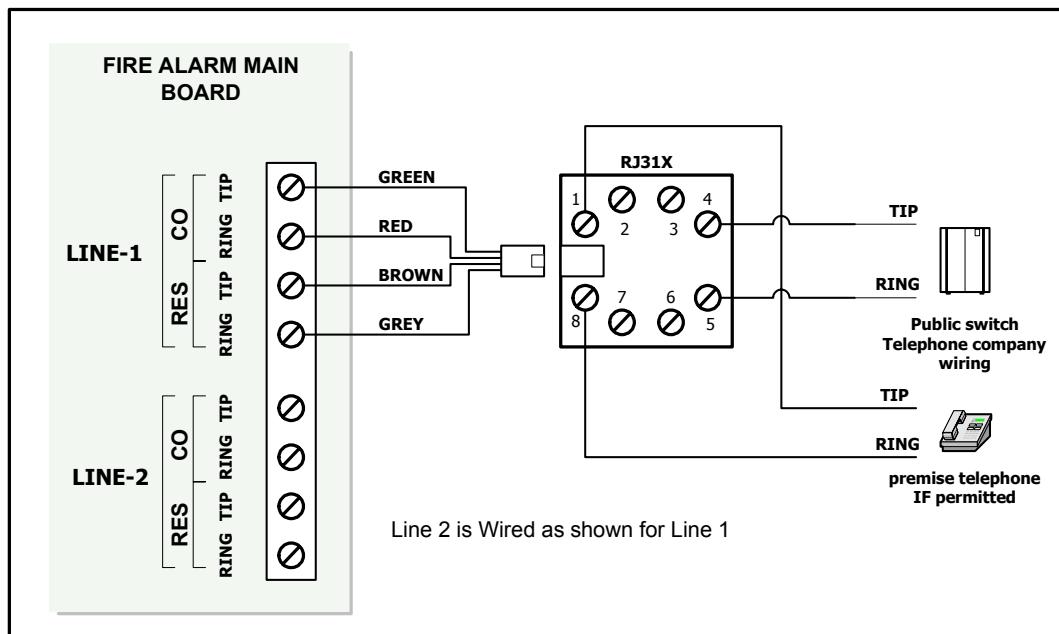
**Figure 14: Releasing Circuit Wiring**

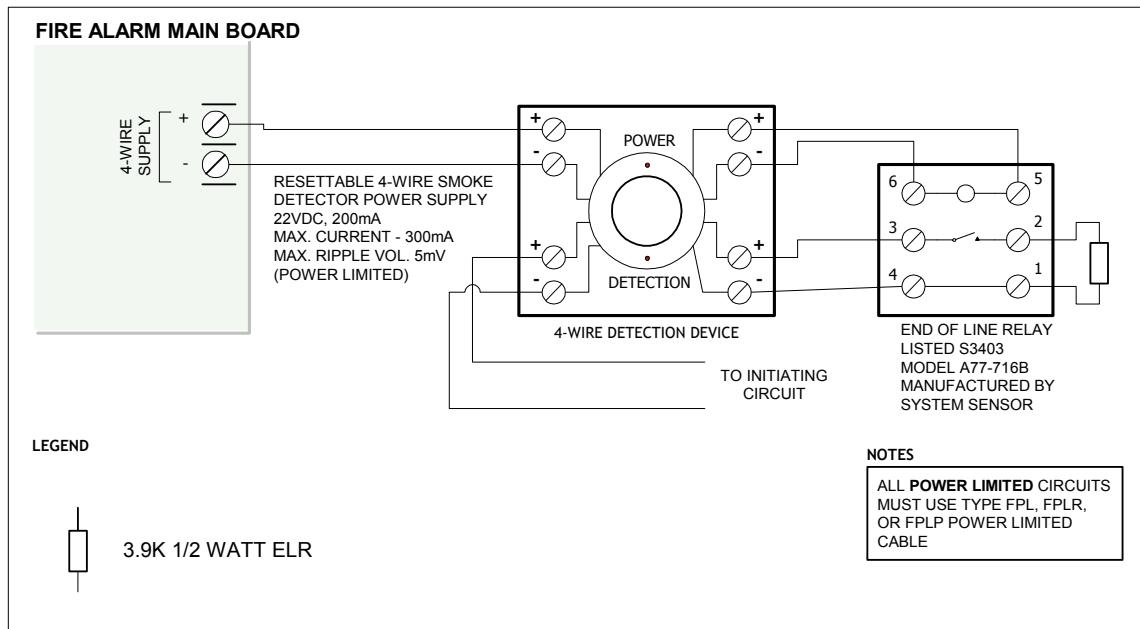


## Dialer Wiring

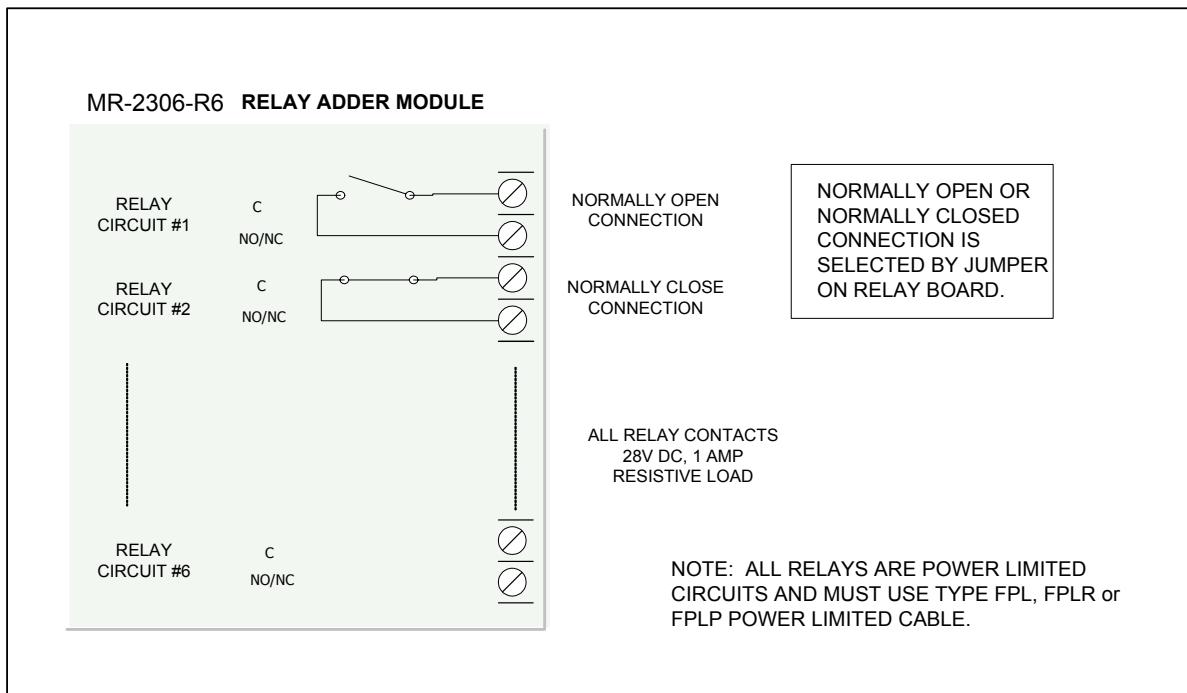
If you have an MR-2320-DR, there is a dialer on board and terminals marked Line 1 and Line 2 must be wired as shown in *Figure 15* below.

**Figure 15: Dialer Wiring**



**Figure 16: Four-wire smoke detector wiring****Relay Adder Module Wiring**

Wire relays on the relay adder module MR-2306-R6 as shown in Figure 17.

**Figure 17: Relay per zone (MR-2306-R6) Terminal connection**

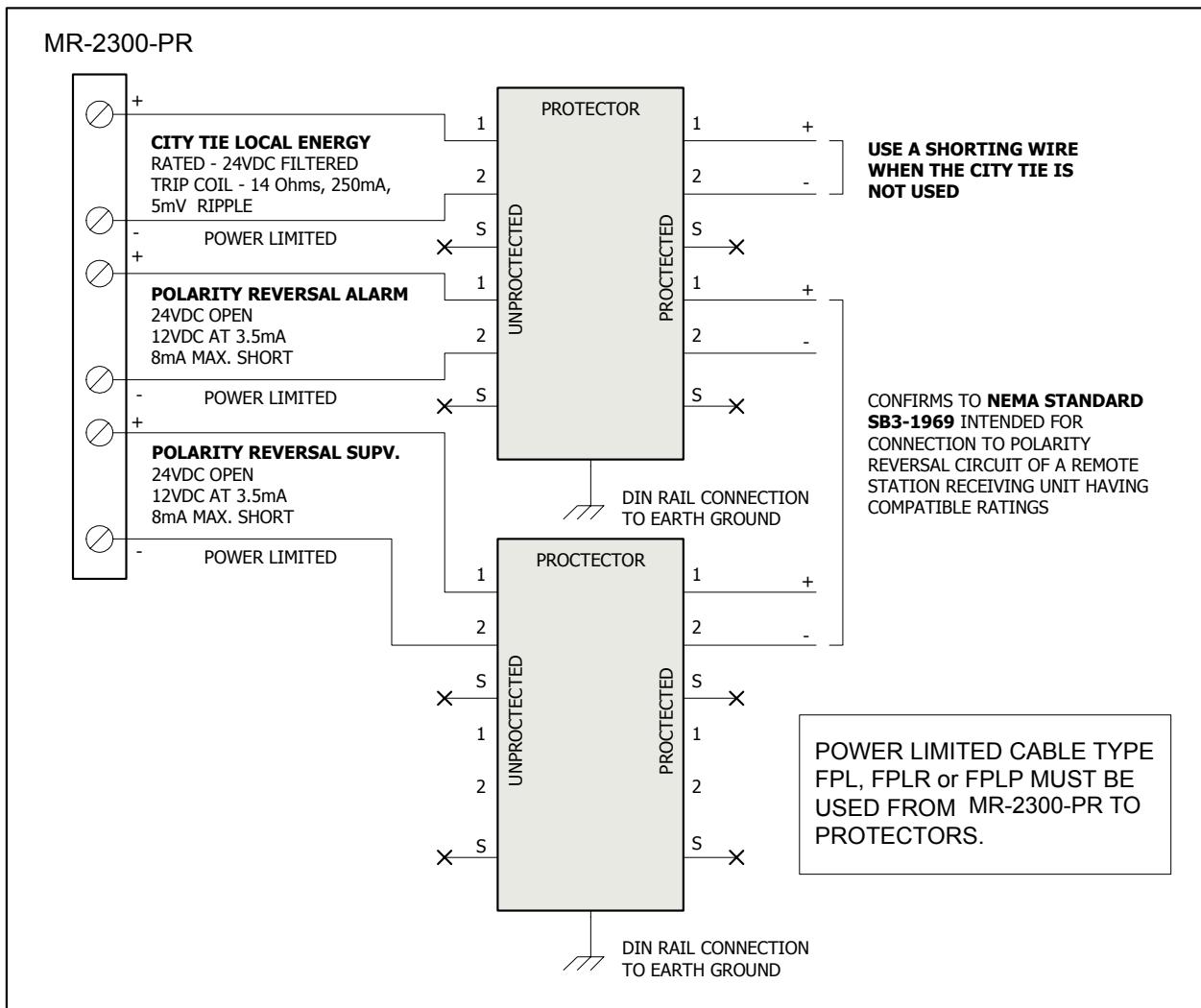
## Polarity Reversal and City Tie Module (MR-2300-PR) Wiring

Wire MR-2300-PR Polarity Reversal and City Tie Module (if used) as shown in *Figure 18*, below. See *Appendix D* on page 80 for module specifications. Power Limited cable type FPL, FPLR or FPLP must be used.

For USA installation, the installer must use **Atlantic Scientific (Tel: 407-725-8000), Model #24544 Protective Device**, or similar **UL-Listed QVRG secondary protector**, as shown.

For use in Canada, the Protective Device is not required but still recommended.

**Figure 18: Polarity reversal and city tie module terminal connection**



## Power Supply Connection

The power supply is part of the Main Chassis. The ratings are:

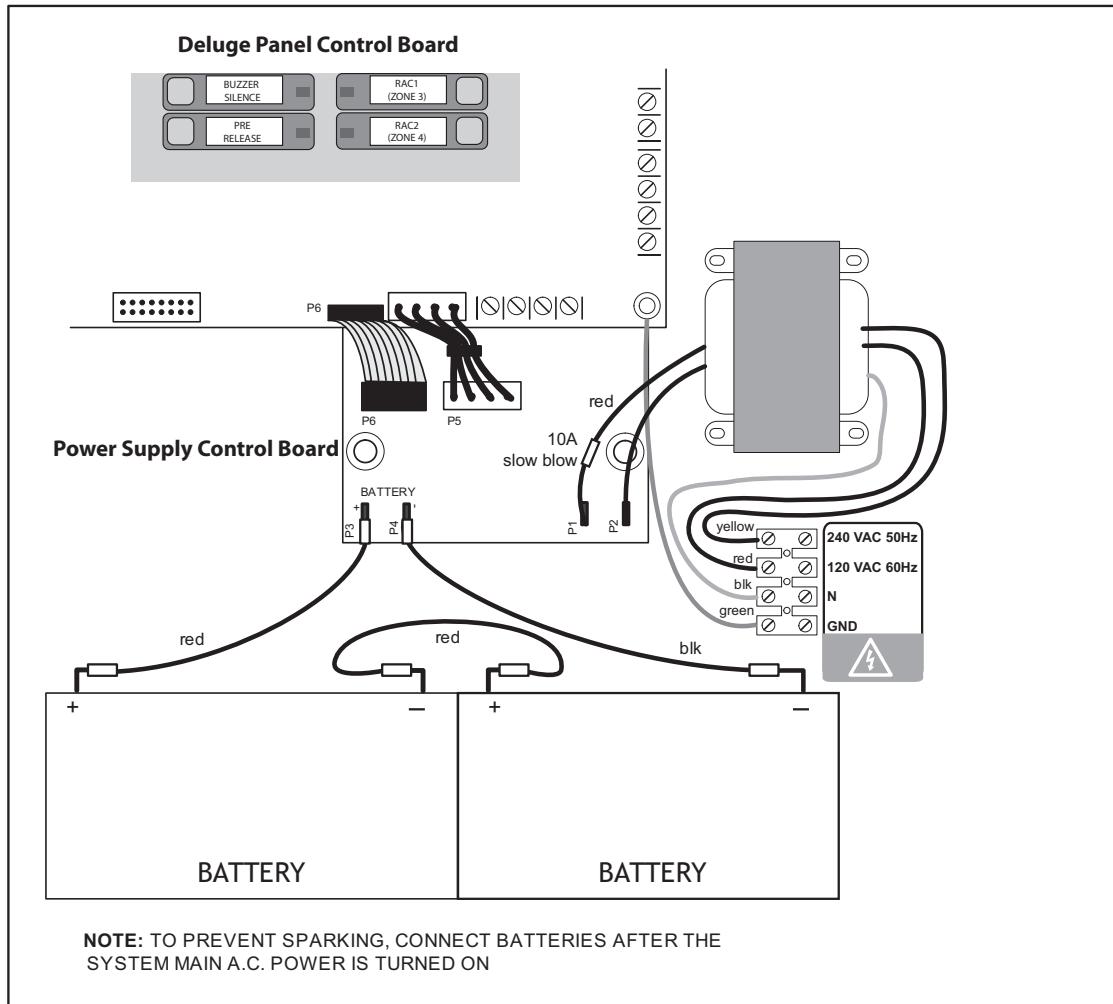
Type	Rating
Electrical Input rating	120 VAC 60Hz 1.7A /240 VAC 50 Hz 0.85 A, 10A slow blow fuse on secondary of transformer
Power supply total current	6.5A AC maximim @ secondary of transformer
Battery fuse on Main module	10A, slow blow micro fuse

Wire the power supply as shown below in *Figure 19* using the proper wire gauge.



**CAUTION:** Do not exceed power supply ratings.

**Figure 19: Power Supply Connection**



## Wiring Tables and Information

**Table 3: Initiating Circuit Wiring**

Wire gauge AWG	Maximum wiring run to last device	
	Feet	Meters
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

**Notes:**

- For Class A the maximum wiring run to the last device is divided by two.
- Maximum loop resistance should not exceed 100 ohms.
- Maximum capacitance of 0.5uF total on each initiating circuit.

**Table 4: Indicating Circuit Wiring**

Total signal load in amperes	Maximum wiring run to last device								Max. loop resistance in ohms	
	18 AWG		16 AWG		14 AWG		12 AWG			
	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters		
0.06	2350	716	3750	1143	6000	1829	8500	2591	30	
0.12	1180	360	1850	567	3000	915	4250	1296	15	
0.30	470	143	750	229	1200	366	1900	579	6	
0.60	235	71	375	114	600	183	850	259	3	
0.90	156	47	250	76	400	122	570	174	2	
1.20	118	36	185	56	300	91	425	129	1.5	
1.50	94	29	150	46	240	73	343	105	1.2	
1.70	78	24	125	38	200	61	285	87	1.0	

**Notes:**

- For Class A wiring the resistance in ohms is multiplied by two.
- Maximum voltage drop should not exceed 1.8 volts.

### Four-Wire Smoke Power (regulated)

Four-wire smoke power is provided for four-wire smoke detectors. This filtered supply is supervised therefore a short will disconnect the power and the common trouble is active. The power is reconnected after the 'RESET' key is pressed. This supply is rated at 22.3VDC regulated/300mA max/1V voltage drop maximum.

### Supervised Auxiliary Power (regulated)

Supervised auxiliary power is used to power the remote annunciators and smart relay modules. This filtered circuit is supervised therefore a short will disconnect the power and the common trouble is active. The power is reconnected after the 'RESET' key is pressed. This supply is rated at 22.3VDC regulated/500mA max/1V voltage drop maximum.

## Auxiliary Power (unregulated)

This regulated supply is not supervised. This supply is rated at 24VDC FWR/1.7A max. If there is a short on this circuit, the auxiliary power does not recover automatically when the short is removed. This power supply must be disconnected, then reconnected and the panel reset to re-establish the auxiliary power supply.

# System Checkout

---

## Before turning the power "ON"

To prevent sparking, **do not connect** the batteries. Connect the batteries after powering the system from the main AC supply.

1. Check that all modules are installed in the proper location with the proper connections.
2. Check all field (external) wiring for opens, shorts, and ground.
3. Check that all interconnection cables are secure, and that all connectors are plugged in properly.
4. Check all jumpers and switches for proper setting.
5. Check the AC power wiring for proper connection.
6. Check that the chassis is connected to **EARTH GROUND** (cold water pipe).
7. Make sure to **close the front cover plate** before powering the system from main AC supply.

The best way to check out a panel first is to not connect any field wiring. Power up the panel with an end of line. The panel should be free of trouble. Then connect one circuit at one time. If a trouble occurs, correct the fault then continue the field wiring.

## Power-up procedure

After completing the System Checkout procedures outlined above,

8. Power up the panel. The "AC ON" green LED and the "Common Trouble" LED should illuminate, and the buzzer should sound. Press the "System Reset" button. Since the batteries are not connected, the trouble buzzer should sound intermittently and the common trouble LED should flash.
9. Connect the batteries while observing correct polarity: the red wire is positive (+) and black wire is negative (-). All indicators should be OFF except for normal power "AC ON" green LED and green LED I4 (below the TROUBLE relay at left bottom of board).

**Note:** Green LED I4 is illuminated when the system is normal. This LED indicates that the trouble relay is in normal standby condition.

10. Configure the Fire Alarm Control Panel as described in the Configuration section.

## Troubleshooting

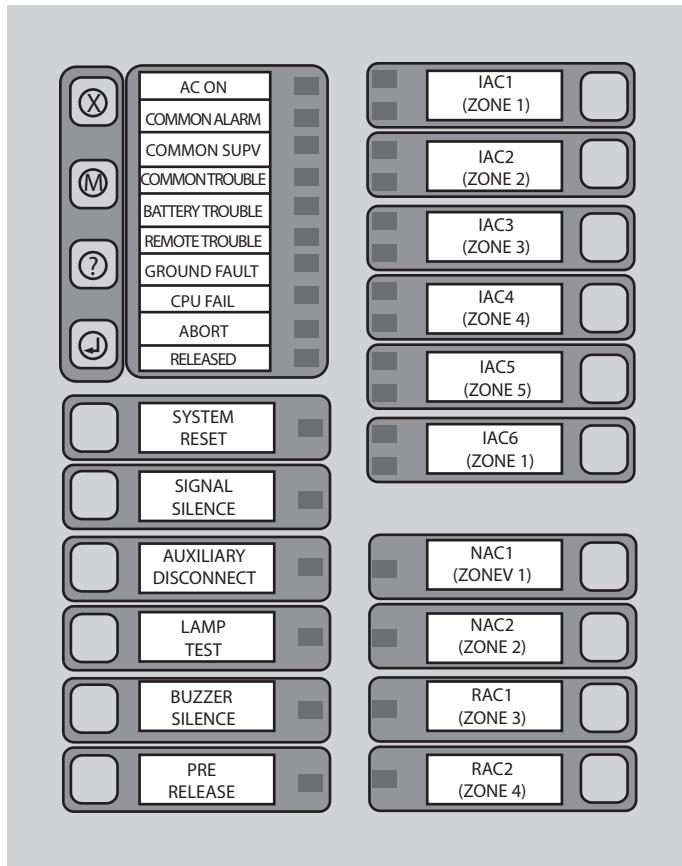
Symptoms	Possible Cause
Circuit Trouble	To correct the fault, check for open wiring on that particular circuit loop or if the Circuit Disconnect Button is active. <i>Notes: (1) Bypassing a detection circuit or signal circuit will cause a system trouble (off-normal status); (2) Bypassing a releasing circuit will cause a supervisory signal.</i>
Remote Trouble	Remote Trouble will be indicated on the main panel display for any failure reported by, or failure to communicate with a remote annunciator or other remote device.
Ground Fault	This panel has a <b>common ground fault detector</b> . To correct the fault, check for any external wiring touching the chassis or other Earth Ground connection.
Battery Trouble	Check for the presence of batteries and their conditions. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace batteries as soon as possible.
Common Trouble	If only a common trouble is indicated on the main panel and none of the above confirming trouble indicators are on, check the following for possible fault: <ul style="list-style-type: none"> <li>• Check for any missing interconnection wiring.</li> <li>• Check for any Module missing that was part of the Configuration.</li> <li>• Check for improperly secured cabling.</li> </ul>

# Indicators, Controls and Operations

---

Refer to *Figure 20* below for LED Indicator and Control Button locations.

**Figure 20: LED indicators and control buttons**



The Main Display Panel on the Main Pre-Action/Deluge and Agent Release Control Board consists of:

- 16 common LED Indicators (left portion of display)
- Ten Common Buttons (left half portion of display)
- Up to six Initiating Circuit Alarm LEDs and six Initiating Circuit Trouble LED Indicators
- Four Indicating/Releasing Circuit LEDs (labeled NAC for Notifying Appliance Circuit or RAC for Releasing Appliance Circuit)
- Up to ten disconnect buttons (six for initiating circuits & four for indicating/releasing circuits)

LED Indicators may be amber, red, or green, and may illuminate continuously (steady), or at one of two flash rates.

- Fast Flash (Supervisory) - 120 flashes per minute, 50% duty cycle
- Trouble Flash (Trouble) - 20 flashes per minute, 50% duty cycle

Note that each display is supplied with laser printer printable paper labels for sliding into the plastic label template on the panel. For the Main Display, the paper label is **Secutron #ND-2056SEC**.

## Common LED indicators

### AC ON

The AC ON led is on steady green while the main AC power is within acceptable levels. It is turned off when the level falls below the power-fail threshold.

**COMMON ALARM**

The common alarm led is illuminated steady red as a result of any active alarm present in the system.

**COMMON TROUBLE**

The common trouble led is illuminated steady amber as a result of a trouble condition being detected on the system.

**BATTERY TROUBLE**

Flashes amber at a slow rate, when the battery voltage is lower than the specified threshold or the battery is off line.  
Flashes amber at a fast rate when there is a trouble on the battery charger circuit.

**REMOTE TROUBLE**

Flashes amber at a slow rate as a result of any remote trouble condition.

**GROUND FAULT**

Flashes amber at a slow rate when there is a ground fault detected in the system.

**CPU FAIL**

Flashes amber at a slow rate when the CPU is not working properly.

**ABORT**

Illuminate steady amber when the abort circuit is active.

**RELEASED**

Illuminate steady red when the releasing circuit(s) is active.

**SYSTEM RESET**

Turn on steady amber during the system reset process.

**SIGNAL SILENCE**

Flashes amber at a slow rate when the signal circuits are silenced.

**AUXILIARY DISCONNECT**

Flashes amber at a slow rate when the auxiliary disconnect function is active.

**LAMP TEST**

Illuminate amber steady when the lamp test button is pressed.

**BUZZER SILENCE**

Flashes amber at a slow rate when the buzzer is silenced.

**PRE RELEASE**

Flashes red at a fast rate, when the release timer is started turns off when the release timer expires or the system is reset.

## Menu Buttons

To use the menu buttons you will need to install the CFG-300 configuration tool. See *Using the CFG-300 Tool* on page for details.



### Menu Button

Pressing and entering the passcode will allow you to enter the command menu.



### Info Button

When the system is off-normal, press to display extra information of the event.



### Enter Button

Pressing this button to select a menu option or to confirm a menu operation.



### Cancel Button

To return to previous menu in the configuration or command mode.

## Switches and Common Indicators

The MR-2320 Series panel is a six-zone panel with four output circuits. The circuits are arranged in the following configuration:

Zone 1	Input circuit
Zone 2	Input circuit
Zone 3	Input circuit
Zone 4	Input circuit
Zone 5	Manual Release/Abort switches combination or individual switch
Zone 6	Manual Release/Abort switches combination or individual switch
Out 1	NAC1
Out 2	NAC2
Out 3	Releasing circuit 1
Out 4	Releasing circuit 2 or NAC3 in some applications

### Zone 1 to Zone 4

- Alarm LED (red) turns on steady when an alarm is detected
- Supervisory LED (amber) turns on steady when the circuit is active
- Trouble LED (amber) turns on at slow flash rate when in trouble or bypassed

### Zone 5 and Zone 6

- Alarm LED & Trouble LED The zone type and LED behavior varies upon the configuration. Steady when turned on.

### Out1 and Out2 (NAC circuits)

- Trouble LED (amber) turns on at slow flash rate when in trouble or bypassed

### Out3 and Out4 (Releasing circuits)

- Trouble LED (amber) turns on steady when the circuit is bypassed  
turns on at slow flash rate when in trouble

### Input Circuits Bypass Switch

These bypass switches are used to bypass the input circuit. Bypass is a toggle switch which will bypass and un-bypass in a sequence whenever the switch is pressed. When the input circuit is bypassed a trouble is generated and the system will not respond to any trouble or alarm on the bypassed input circuit. If the bypassed input circuit is active and the Bypass Switch is pressed for un-bypassing, the Alarm LED will flash at the fast rate for 10 seconds. During these 10 seconds, pressing the Bypass Switch can bypass the active input circuit again. After 10 seconds, the bypassed alarm will be processed.

## **Output Circuits Bypass Switch**

The output circuit bypass switches bypasses the NAC circuit and the releasing circuit. The switch is a toggle switch and pressing it again, will un-bypasses the output circuit the trouble LED turns off.

## **Common Controls**

### **System Reset Button**

The System Reset button resets the Fire Alarm Control Panel and all Circuits. In particular, the system reset button

- Resets all Latching Trouble Conditions
- Resets all Initiating and Releasing Circuits
- Resets 4-Wire Smoke Supply
- Turns off all Indicating Circuits
- Turns off Signal Silence Indicator
- Stops and resets all Timers
- Processes inputs as new events
- Does not affect Aux Disconnect

### **Signal Silence Button**

Activation of the Signal Silence button when the panel is in alarm turns on the Signal Silence indicator and deactivates any Silenceable Indicating Circuits. Non-Silenceable Circuits are unaffected. Signals will re-sound upon any subsequent alarm. Subsequent operation of signal silence resounds all Silenceable signals. This button does not function during any configured Signal Silence Inhibit Timer period.

### **Auxiliary Disconnect Button**

Activating the Auxiliary Disconnect button activates the Auxiliary Disconnect function. The Auxiliary Alarm Relay is always disconnected with this button. The Common Alarm Relay, the Common Supervisory relay and all correlated alarm relays may be disconnected as selected through configuration. Activating the Auxiliary Disconnect button also causes the Common Trouble LED to illuminate steady, the common trouble relay to send a trouble message and the trouble buzzer to flash at the trouble flash rate. Pressing the Auxiliary Disconnect button again de-activates this function and the system will go back to normal.

### **Lamp Test Button**

Activation of the Lamp Test button causes all front panel Indicators to steadily illuminate and turns the buzzer ON steady. If Lamp Test is active for more than 10 seconds, Common Trouble is activated.

### **Buzzer Silence Button**

Activation of the Buzzer Silence button while the Buzzer is sounding silences the Buzzer. The Buzzer will resound if there is a subsequent event. Pressing the button when the Buzzer is not sounding has no effect.

## **Circuit (zone) disconnect buttons**

Circuit (Zone) Disconnect pushbuttons are provided for all initiating indicating, and releasing circuits on the Fire Alarm Control Panel. These pushbuttons are located beside their respective indicating LED.

Pressing a Circuit Disconnect pushbutton bypasses the associated circuit and turns on its Trouble Indicator, activating Common Trouble. Pressing a releasing circuit disconnect pushbutton bypasses the associated releasing circuit and turns on its LED, activating common supervisory. While a Circuit is disconnected, all changes in status (alarms and troubles) on that circuit are ignored. The panel does not activate disconnected indicating circuits. Circuit Disconnect pushbuttons are toggle switches; therefore, pressing an activated switch a second time will un-bypass (reconnect) the circuit.

Disconnecting an active Latching Initiating Circuit (including Alarms, Water flow Alarm, Sprinkler Alarm, General Alarm, and Latching Supervisory) does not affect its status until the panel is reset. Disconnecting an active Non-Latching Initiating Circuit (including Non-Latching Supervisory and Trouble-Only) causes them to behave as if the alarm situation has disappeared. Disconnecting an active indicating circuit immediately deactivates the circuit.

When an Initiating Circuit Disconnect pushbutton is returned to the normal state (by pressing it again in order to un-bypass the circuit), the panel checks the state of the circuit. If the circuit is active, the Status Indicator flashes for 10 seconds at the Fast Rate without processing the input. If the Circuit is not re-bypassed by then, it will be processed as a new input.

## Common Relays

Relay Type	Single Hazard	Dual Hazard
Trouble Relay	Trouble	Trouble
Supervisory Relay	Supervisory	Supervisory
Alarm Relay	Alarm	Hazard1 (Alarm)
Aux Alarm Relay	Alarm (Silence-able)	Hazard2 (Alarm)



**Note:** Some troubles are latching once they are detected they remain active until system reset. In this case the common trouble indicator will also remain active until system reset. The common trouble is not bypassed by the auxiliary disconnect function.

## Circuit Types

### Initiating (Detection) Circuit Types

#### Non-Verified Alarm

A Non-Verified alarm is a “normal” type of alarm that can have pull stations, smoke detectors, or heat detectors attached to it. Activation of any of these devices will immediately result in an alarm condition in the Fire Alarm Control Panel. An Alarm condition causes the associated Circuit Status LED and the Common Alarm LED to illuminate red.

#### Water Flow Alarm (Water flow Sensors)

Water Flow Alarms are identical to normal Non-Verified Alarms except that any indicating circuits programmed to these circuits (all are by default) are Non-Silenceable. Also, if Water Flow Retard Operation is enabled, these circuits are sampled every one second. If ten samples are active within any 15-second interval, the Water flow Alarm is confirmed and processed. An alarm condition causes the associated Circuit Status LED and the Common Alarm LED to illuminate red.



**Note:** Do not use Retard Operation with any external retarding device; maximum retard may not exceed 120 seconds.

#### Non-Latching Supervisory (For Supervisory Circuits)

Activation on these circuits will cause the Circuit Status LED and the amber Common Supervisory LED to illuminate. The buzzer will sound at fast rate. If the circuit activation is removed, the Supervisory condition will clear (as long as there are no other Supervisory conditions in the system) and the Circuit Status LED will turn off.

#### Latching Supervisory (For Supervisory Devices)

Activation on these circuits will cause the Circuit Status LED and the amber Common Supervisory LED to illuminate. The buzzer will sound at fast rate. If the circuit activation is removed, the Supervisory condition will NOT clear.

#### Abort Switch

When the hazard area is in alarm (pre-discharge) state and the release timer is running, the activation of the corresponding Abort Switch will pause the releasing timer. The release process is held while the Abort Switch is pressed. Releasing the Abort Switch will resume the releasing timer and the corresponding hazard area goes into Alarm (pre-discharge) state again. The value of the release timer after Abort Switch is released depends on the type

of Abort Delay in the configuration. When the release timer expires, the corresponding releasing circuit is activated. When the panel is in normal condition, activation of the Abort Switch will cause a trouble signal and the corresponding zone amber LED turns on at slow flash rate.

### **Manual Release Switch**

Activation of the Manual Release Switch of a hazard area will activate the corresponding releasing circuit. If the corresponding Manual Release Delay is non-zero, the releasing circuit will be activated after the Manual Release Delay expires.

### **Combination of Abort Switch and Manual Release Switch**

This type of circuit is the combination of both Abort Switch and Manual Release Switch. This combination always applies to the same hazard area. A short condition on the circuit is a Manual Release Active and a current limit condition is an Abort Switch Active.

### **Indicating (Signal) Circuits Types**

#### **Silenceable Signal**

The Silenceable Signal circuit is used for audible devices such as bells and piezo mini-horns that may be silenced either manually or automatically.

#### **Non-Silenceable Signal**

The Non-Silenceable Signal Circuit is used for audible devices such as bells and piezo mini-horns that may **not** be silenced either manually or automatically. While sounding, these devices follow the evacuation code pattern that is configured by the user. For more information on evacuation codes, refer to *Evacuation Codes* on page.

#### **Silenceable Strobe**

Silenceable strobes will be silenced when the “signal silence” key is pressed.

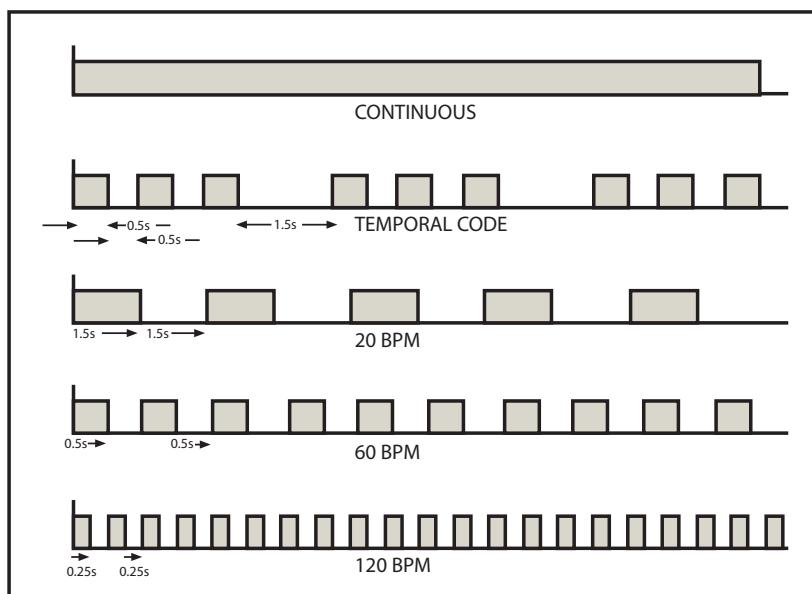
#### **Non-Silenceable Strobes**

Non-Silenceable Strobes will not be silenced when the “signal silence” key is pressed.

### **Evacuation codes**

<b>Continuous</b>	On 100% of the time
<b>Temporal Code</b>	3 of 0.5 second on, 0.5 second off then, 1.5 second pause
<b>20 BPM</b>	1.5 seconds on, 1.5 seconds off
<b>60 BPM</b>	0.5 second on, 0.5 second off
<b>120 BPM</b>	0.25 second on, 0.25 second off

**Figure 21: Evacuation and Alert Codes**



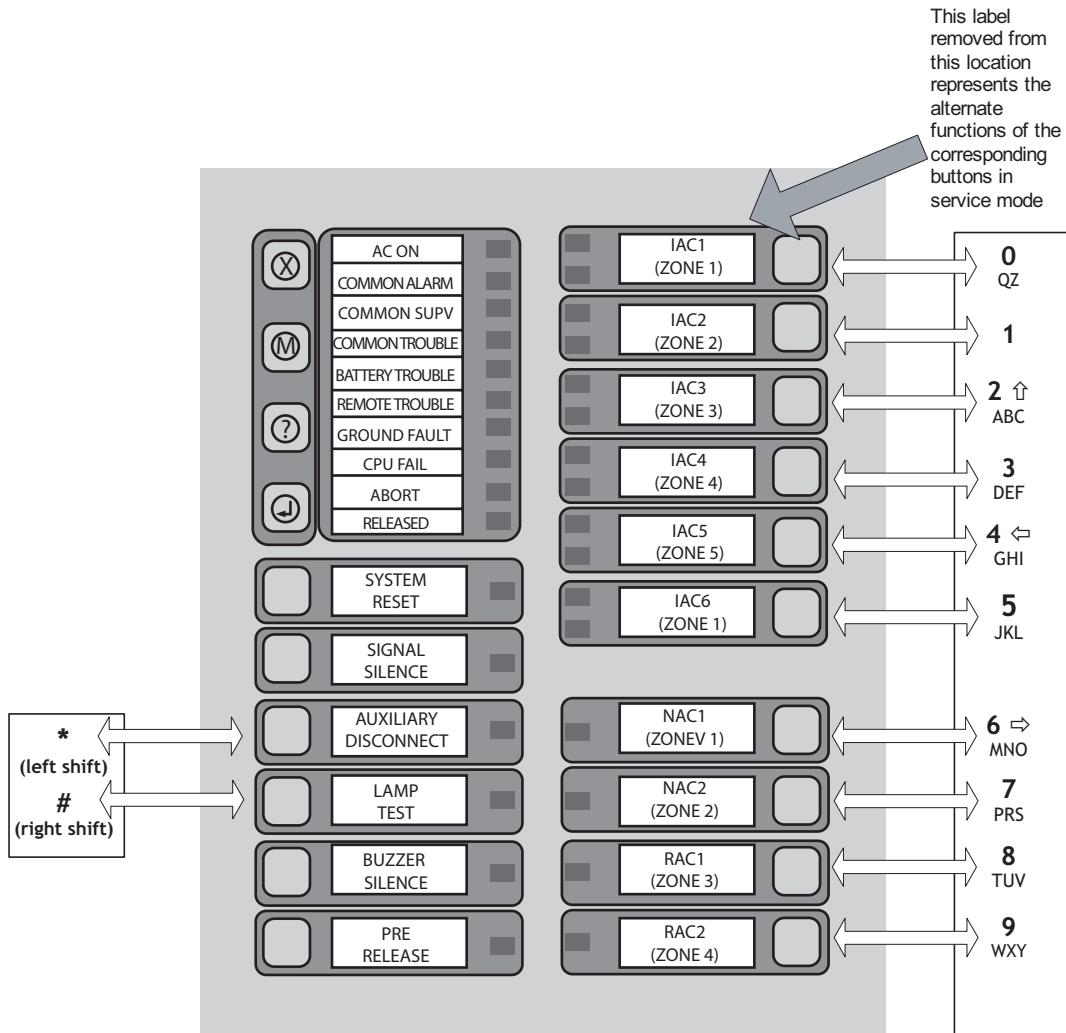
# Configuration

Configure the MR-2320 Series Panels using the CFG-300 LCD Tool (see further documentation packaged with CFG-300 for configuration information).

## Using the CFG-300 Tool

Connect the CFG-300 to the panel, then press  (Menu button). The CFG-300 LCD display will display the Main Menu. The function of different buttons on the front panel display is shown in *Figure 22*, below.

**Figure 22: MR-2320 Configuration**



## Entering the Passcode

The programming section is passcode protected. The following screen shows the message that is displayed to enter the passcode. The maximum allowable passcode is ten digits long, and permits numerical values only. Press  (Enter button) after entering the passcode. If the passcode is correct, it will take you to the main command menu. If the passcode is wrong the system will ask you to re-enter passcode. The system will be exhausted after three retries and will then take you back to the Normal message display.



Three levels of access are defined:

1) Command - Level 0:

The default password is for this level "1111" without quotes. In this level the user can only perform regular testing and operation.

2) Configuration - Level 1:

The default password is for this level "2222" without quotes. User can change configuration and have access to command level.

3) Factory - Level 2:

Currently not used.

When the user presses "MENU" and enters the password, they should enter the password of the level intended. If the user is in a lower level of access, attempts to operate functions requiring a higher level of access will be refused.

## How to Use the Keypad to Program the MR-2320

1. Press  (Menu button). You will be prompted to enter your password.
2. Enter your password, then press  (Enter button) to continue.
3. Select a Command Menu option by pressing . The corresponding submenu will display.
4. Use the up and down arrow buttons to scroll through the submenu.
5. Press  to select a submenu option.
6. Use the left or right arrow buttons to select/unselect an option (selected = "X"). Use the up and down arrows to scroll through the different menu options. When entering numerical data, use the up and down arrows to increase or decrease the number.
7. Once you have made the correct selection, press  to confirm the change. The display will return to the submenu screen.
8. Press  (Cancel button) to return to the previous menu.

### Command Menu

The main command menu is pictured below. The first line of the LCD will always show “-Command Menu-”, and the second line scrolls through different selections. Use the “UP” and “DOWN” keys to scroll through the menu, and press the  key to make a selection. To exit from the main command menu, select the “Exit” menu option and then press either the  or  key.



**Note:** Command Menu Item 1 and 6 can only be accessed if jumper JW6 is placed on the main board.



Access level Required
Configuration
Configuration
Configuration
Command
Command
Configuration
Command
Command

Pressing “LAMP TEST” at any time will show the information about the system and the software version as shown below.



The first line shows the panel mode number, pre-programmed mode and the information if the panel has a dialer or not. The second line shows the software version number. The version of the software is read as Major.Minor.Revision.

## 1. Panel Config (Command-Menu)

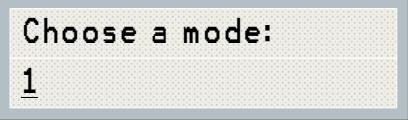
The following is a detailed description of the MR-2320 configuration menu.



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page for detailed instructions on making menu selections.

- Panel Config-
- 1. Choose a mode
- 2. Hazard Config
- 3. Panel Features
- 4. Default Config

### Command Menu-->Panel Config-->Choose a mode

<p><i>Command Menu--&gt;Panel Config--&gt; Choose a mode</i></p> <p><b>1. Choose a mode</b></p> 	<p>1--&gt;Default</p>	<p>Use this function to choose a pre-programmed panel configuration. Selections range from modes 1 to 11. Refer to <i>Pre-Programming Modes</i> on page for details on mode configurations.</p> <p><b>Note: changing the fixed configuration of the panel will cause all configuration data set to default for that particular mode.</b></p>
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**Command Menu-->Panel Config-->Hazard Config****-Hazard Param.-**

- 1. Release timer**
- 2. Abort Delay**
- 3. Manual Rls Delay**
- 4. Soak timer**



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page for detailed instructions on making menu selections.

<b>Command Menu--&gt;Panel Config--&gt; Hazard Config</b> <b>1. Release Timer</b>  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>Release timer(sec):</b>  <input type="text" value="60"/> </div>	60->Default Available options: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 seconds	Use this function to set the programmable timer that delays the activation of the releasing application circuits. This timer starts immediately after receiving a confirming alarm (cross-zoned hazard area) or a single alarm (non-cross-zoned hazard area). When the timer expires, the releasing circuit activates. Value: 0 to 60 seconds in five-second increments.
<b>Command Menu--&gt;Panel Config--&gt; Hazard Config</b> <b>2. Abort Delay</b>  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>Abort Delay Type:</b>  <input checked="" type="checkbox"/> Standard UL  <input type="checkbox"/> IRI  <input type="checkbox"/> NYC  <input type="checkbox"/> Local Juris. </div>	[X] Standard UL->Default [ ] IRI [ ] NYC [ ] Local Juris.	Use this function to set how the Abort Switch operates with the Release Timer. Note that if the Release Timer is set to zero, the Abort Switch does not operate. In <b>Standard UL</b> mode, the release timer will stop and hold when the Abort Switch is pressed. When the switch is released, the Release Timer restarts from whichever is greater: the remaining time on the timer or 10 seconds. In <b>IRI</b> mode, the switch works in the same way as it does in Standard UL mode, except that the switch will function only if it is pressed and held before the second alarm comes in. In <b>NYC</b> mode, pressing the Abort Switch will reset to the Release Timer and add 90 seconds to the configured timer duration. After the Abort Switch is released, the Release Timer will restart. In <b>Local Juris.</b> (Local Jurisdiction Delay), pressing the Abort Switch will reset the Release Timer back to its configured value. After the switch is released, the Release Timer will restart.
<b>Command Menu--&gt;Panel Config--&gt; Hazard Config</b> <b>3. Man. Rls Delay</b>  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>Man. Rls Delay(sec):</b>  <input type="text" value="0"/> </div>	0->Default Available options: 0, 5, 10, 15, 20, 25, 30 seconds	Use this function to set the time delay of activation of corresponding releasing circuit(s) after activation of the manual release switch. Value: 0 to 30 seconds in five-second increments.

<b>Command Menu--&gt;Panel Config--&gt;Hazard Config</b>	0->Default (continuous) The selectable values are in seconds: 0, 10, 20, 30, 40, 50, 60, 120(2min), 180(3min), 240(4min), 300(5min), 360(6min), 420(7min), 480(8min), 540(9min), 600(10min), 660(11min), 720(12min), 780(13min), 840(14min), 900(15min)	Use this function to set the length of time for which the releasing circuit is active. When the soak timer expires, the control panel automatically shuts off the activated releasing circuit. 0 seconds means that the soak timer is disabled and the releasing circuit is active continuously.
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**Command Menu-->Panel Config-->Features**

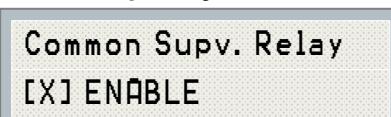
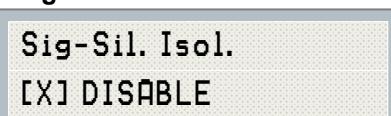
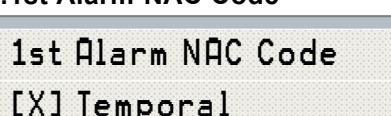
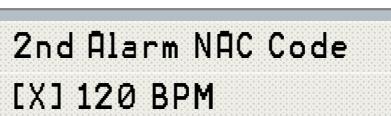
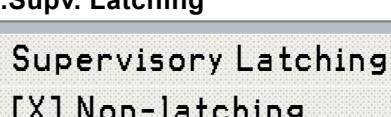
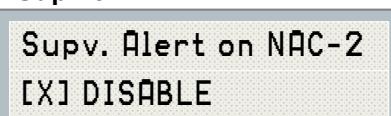
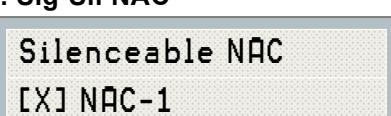
<b>-Panel Features-</b>	
1.	Man. Sig. Sil
2.	Wtr/Sprk. Retd
3.	Aux Dis Corr
4.	Sig-Sil Inh Tm
5.	Aux Dis Alm&Sv
6.	Auto Sil. Tmr
7.	Rem. Annun.
8.	Alm. Xmit. Sil.
9.	Pwr Fail Tmr.
10.	Com. Supv. Rly
11.	Sig. Sil. Isol.
12.	1st Alarm Code
13.	2nd Alarm Code
14.	Supv. Latching
15.	Supv on NAC-2
16.	Sig-Sil NAC



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page for detailed instructions on making menu selections.

<b>Command Menu--&gt;Panel Config--&gt;Features</b>		
<b>1. Manual Sig. Silence</b>	[X] ENABLE ->Default [ ] DISABLE	Use this function to enable or disable the Signal Silence operation on the panel.

<b>Command Menu--&gt;Panel Config--&gt;Features 2. Wtr/Sprk. Retd</b>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default	By default all the initiating circuits configured as waterflow or sprinkler act as non-verified alarms. If enabled, a retard operation is performed for initiating circuits configured as waterflow or sprinkler.
<b>Command Menu--&gt;Panel Config--&gt;Features 3. Aux Dis Corr</b>	<input checked="" type="checkbox"/> ENABLE ->Default <input type="checkbox"/> DISABLE	By default this function will disconnect the auxiliary alarm relay when the aux disconnect button is pressed. If enabled, this function will disconnect the auxiliary alarm relay <i>and</i> all correlated relays when the aux disconnect button is pressed. <b>Correlated relays include:</b> MR-2306-R6 and MR-2312-S12.
<b>Command Menu--&gt;Panel Config--&gt;Features 4. Sig-Sil Inh Tmr</b>	<input checked="" type="checkbox"/> DISABLE->Default <input type="checkbox"/> 10sec <input type="checkbox"/> 20sec <input type="checkbox"/> 30sec <input type="checkbox"/> 1min	Use this function to inhibit the signal silence switch for a desired length of time. The time period should expire before the signals may be silenced. According to the Canadian National Building Code, this timer should be set to one minute.
<b>Command Menu--&gt;Panel Config--&gt;Features 5. Aux. Dis. Dis Alm&amp;Sv</b>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default	If enabled the Common Alarm and Common Supervisory relays will be disconnected when Aux. Disconnect is pressed. Also, the MR-2300-PR will not transmit a supervisory or alarm event. If disabled, the Aux disconnect switch has no effect on the Common Alarm relay, the Common Supervisory relay, and the MR-2300-PR.
<b>Command Menu--&gt;Panel Config--&gt;Features 6. Auto Sig-Sil. Tmr</b>	<input checked="" type="checkbox"/> DISABLE->Default <input type="checkbox"/> 5 Min <input type="checkbox"/> 10 Min <input type="checkbox"/> 20 Min <input type="checkbox"/> 30 Min	Use this function to set the time period for which the indicating circuits will sound before they are automatically silenced. According to the Canadian National Building Code, this timer should not be set to less than 20 minutes.
<b>Command Menu--&gt;Panel Config--&gt;Features 7. Rem. Annun.</b>	<input checked="" type="checkbox"/> NONE->Default <input type="checkbox"/> 1 <input type="checkbox"/> 2 ... <input type="checkbox"/> 6	Use this function to program the number of remote annunciators. Any combination of remote annunciators or smart relays can be used as long as the number does not exceed 6. The annunciators' addresses should be linear: without gaps and in sequence.
<b>Command Menu--&gt;Panel Config--&gt;Features 8. Alarm Xmit-Sil.</b>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE->Default	Use this function to allow the alarm transmit and auxiliary alarm relay to reset on the Signal Silence rather than the Reset switch.

<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>9. Pwr Fail Tmr</b> 	[X] NONE->Default [ ] 1 HRS [ ] 3 HRS	Use this function to delay the reporting of AC power fail trouble for a specific time period. If disabled, the AC power fail will be reported immediately.
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>10. Com. Supv. Rly</b> 	[X] ENABLE->Default [ ] DISABLE	If disabled, the common supervisory relay can be used as a common alarm relay. It will act the same way as a common alarm relay. If enabled, it is used as a common supervisory relay.
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>11. Sig-Sil. Isol.</b> 	[ ] ENABLE [X] DISABLE->Default	Enable this function only when suite isolators are used (Canada only).
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>12.1st Alarm NAC Code</b> 	[X] Temporal ->Default [ ] 20 BPM	Sets the NAC indicating code when the 1st alarm comes in.
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>13. 2nd Alarm NAC Code</b> 	[X] 120 BPM->Default [ ] 60 BPM [ ] Temporal	Choose the NAC indicating code when the 2nd alarm comes in.
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>14. Supv. Latching</b> 	[ ] Latching [X] Non-latching->Default	Use this function to set the supervisory circuit as either latching or non-latching. NOTE: For ULC operation the supervisory should be programmed as latching
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>15. Supv on NAC-2</b> 	[ ] ENABLE [X] DISABLE->Default	Use this function to enable/disable the supervisory circuit indication on NAC-2.
<b>Command Menu--&gt;Panel Config--&gt;Features</b> <b>16. Sig-Sil NAC</b> 	[X] NAC-1->Default [X] NAC-2->Default	Use this function to set which NAC circuits are silenceable or non-silenceable.

<p><b>Command Menu/MR-2320 Config/Features/ 17. Active EOL</b></p> <p><b>Active EOL</b></p> <p><b>[X] DISABLE</b></p>	<p>[X] DISABLE-&gt;Default [ ] ENABLE</p>	<p>Enable this function if using an Active EOL. If MR-2300-A is used, this function should be enabled since the Class A Converter has built in Active EOL resistors.</p>
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**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

**Command Menu-->Panel Config-->Default Config**

<p><b>Command Menu--&gt;Panel Config--&gt; Default Config 4. Default Config</b></p> <p><b>Load the default Settings? Y</b></p>	<p>Y--&gt;Default</p>	<p>Use this function to reset the panel to the default configuration of the chosen programming mode.</p>
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## 2. Set Time (Command-Menu)



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page for detailed instructions on making menu selections.

1. Daylight Save
2. Time Clock
3. Compensation

<p>Command Menu/Set time Date</p> <p><b>1. Daylight saving time</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">           Daylight Saving  <input checked="" type="checkbox"/> DISABLE         </div>	<p>[X] DISABLE -&gt;Default  <input type="checkbox"/> ENABLE</p>	<p>Use this function to enable daylight savings time.</p>
<p>Command Menu/Time Clock</p> <p><b>2. Set time and date</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">           HH:MM WKD YYYY-MM-DD            00:00 MON 2000-01-01         </div>	<p>Default 00:00 MON 2000-01-01</p>	<p>Use this function to set the time and date. Use the "LEFT" and "RIGHT" keys to move the cursor to the desired location in the display and use the "UP" and "DOWN" keys to increase or decrease the values. Press the "ENTER" key to accept the changes and the "CANCEL" key to ignore the changes.</p> <p><b>Note:</b> time is in 24hr format</p>
<p>Command Menu/Time Clock</p> <p><b>2. Compensation</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">           HH : MM WKD YYYY - MM - DD            00 : 00 MON 2000 - 01 - 01         </div> <p>When value is entered the following message will appear</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">           Daily Compen. (Sec):            Panel Config Updated         </div>	<p>Default: 0 seconds (no compensation)</p> <p>Compensation values can range from -15 to +15 seconds.</p>	<p>Use the up down arrow keys to select daily compensation value and press ENTER. For a fast clock adjust negatively. For a slow clock adjust positively. For example: for a clock which runs 5 minutes a month (based on 30 days) fast select -10 seconds.</p>

### 3. Set password (Command-Menu)



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page for detailed instructions on making menu selections.

First choose the level of password to be changed

Select Access Level

0

Then

Enter new passcode:

Re-enter new passcode:

If the passcode does not match, the following message appears and the system exit to the main menu

invalid passcode

If the passcode is OK the following message appears and exits to the main menu

passcode updated

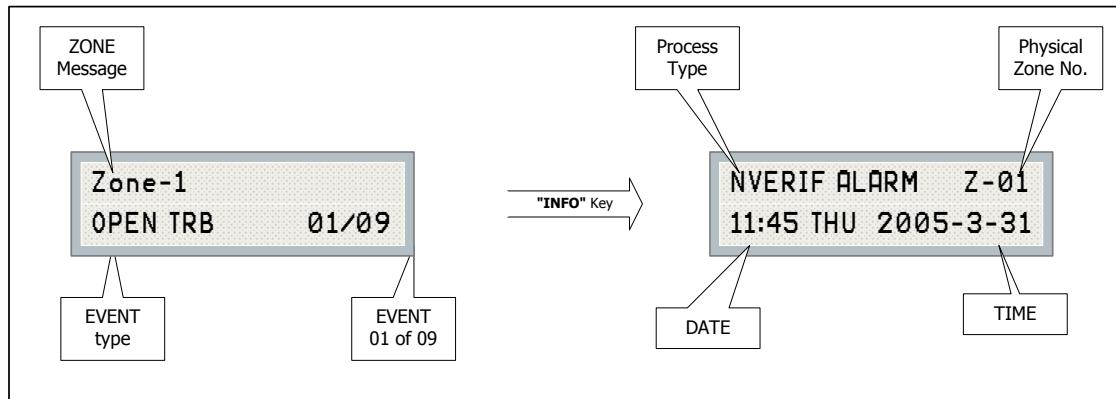
0 -> Default

Use this function to change the pass-code. The minimum number of digits is 4 and the maximum is 10. Only numeric digits are allowed.

The user can change the password only for the current access level as well as any lower levels.

## 4. View Event Log (Command-Menu)

The event log looks the same as the normal event queue. Pressing the “INFO” key has the same effect that it does in the event queue. The illustration below provides an example of how the “INFO” key works and shows the CFG-300 LCD Configuration tool display.



There are a maximum of 200 recent events saved in the event log. If the number of events goes beyond 200, the oldest event is overwritten by the most recent one.

## 5. Clear Event Log (Command-Menu)



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

### -Select Log-

1. Alarm Log
2. General Log
3. All Logs

Select the type of log to clear. Press the “ENTER” key. The system will then confirm before clearing logs.

Clear all the  
Selected log(s)? Y

Press the “ENTER” key to confirm or the “CANCEL” key to cancel the operation.

Log(s) cleared

Use this function to clear alarm logs, event logs, or both.

## 6. Dialer Config (Command-Menu)



**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

The following illustration shows the dialer configuration menu. This menu will show up only if there is a built-in dialer on the main board. Each item in this menu is described below in detail.

### -Dialer Config-

1. Account Info
2. Telephone line
3. Report Options
4. Time Parameter
5. Enable/Disable

**Command Menu-->Dialer Config**

### Account Info

#### -Account Info-

1. Account#1 ID
2. Account#1 Tel
3. Acct#1 Format
4. Account#2 ID
5. Account#2 Tel
6. Acct#2 Format

Command Menu/Dialer Config/Account Info

#### 1.Account# 1 Identification

Account#1 ID  
123456

123456 ->Default

Use this function to set the Account ID for the monitoring station to which the dialer reports events. The maximum # of digits allowed is six. For contact ID, only the first four digits are used; the last two are truncated.

If you are using contact ID the allowed digits for the account ID are simple digits 0 to 9 and hexadecimal digits A to F (the SIA protocol only allows digits 0 to 9).

To enter hexadecimal digits, press the INFO button. The letter "A" will appear. To scroll through the rest of the letters, press INFO repeatedly. Press # to move the cursor to the right or press \* to move it to the left.

<p>Command Menu/Dialer Config/Account Info</p> <p><b>2.Account#1 Telephone Number</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>Account#1 Telnum:</b>  <u>101</u> </div>	<p>[101] -&gt;Default</p>	<p>Use this function to set the telephone number of the monitoring station. The maximum # of digits allowed is 19 including “,” and numerals. The “,” will be treated as 1 sec delay. To enter “,” press the INFO button. Press # to move the cursor to the right or press * to move it to the left. An example of a typical telephone # is 9,,12345678.</p>
<p>Command Menu/Dialer Config/Account Info</p> <p><b>3.Account#1 Reporting Format</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>ACCOUNT#1 Format:</b>  <input checked="" type="checkbox"/> CONTACT ID     </div>	<p>[X] CONTACT ID-Default  <input type="checkbox"/> SIA 300 Baud  <input type="checkbox"/> SIA 110 Baud</p>	<p>Set the reporting format that is recognized or preferred by the monitoring station.</p>
<p>Command Menu/Dialer Config/Account Info</p> <p><b>4. Account# 2 Identification</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>ACCOUNT#2 ID:</b>  <u>654321</u> </div>	<p>654321-&gt;Default</p>	<p>Same as Account#1.</p>
<p>Command Menu/Dialer Config/Account Info</p> <p><b>5.Account# 2 Telephone Number</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>ACCOUNT#2 Telnum:</b>  <u>101</u> </div>	<p>[ 101 ] -&gt;Default</p>	<p>Same as Account#1.</p>
<p>Command Menu/Dialer Config/Account Info</p> <p><b>6.Account# 2 Reporting Format</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>ACCOUNT#2 Format:</b>  <input checked="" type="checkbox"/> CONTACT ID     </div>	<p>[X] Contact ID-Default  <input type="checkbox"/> SIA 300 Baud  <input type="checkbox"/> SIA 110 Baud</p>	<p>Same as Account#1.</p>

**Command Menu-->Dialer Config**

**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

**Telephone Line****-Telephone Line-**

1. Line1 Dialtype
2. Line2 Dialtype
3. Line1 Daltone
4. Line2 Daltone
5. Num of Retries

Command Menu/Dialer-Config/Telephone Line <b>1. Line#1 Dialing Type</b> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Line#1 Dialing Type:</b>  <input checked="" type="checkbox"/> DTMF Dial         </div>	<input checked="" type="checkbox"/> DTMF Dial ->Default <input type="checkbox"/> Pulse Dial	Set the dialing type for line #1; this is the type recognized or preferred by the telephone company.
Command Menu/Dialer-Config/Telephone Line <b>2. Line#2 Dialing Type</b> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Line#2 Dialing Type:</b>  <input checked="" type="checkbox"/> DTMF Dial         </div>	<input checked="" type="checkbox"/> DTMF Dial ->Default <input type="checkbox"/> Pulse Dial	Same as Line#1.
Command Menu/Dialer-Config/Telephone Line <b>3. Line#1 wait for Dial tone</b> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Line#1 Wait Dialtone</b>  <input checked="" type="checkbox"/> ENABLE         </div>	<input checked="" type="checkbox"/> ENABLE ->Default <input type="checkbox"/> DISABLE	Use this function to let the system know whether or not to wait for a dial tone before dialing. Cell phone setup for the dialer requires that the system not wait for dial tone before dialing.
Command Menu/Dialer-Config/Telephone Line <b>4. Line#2 wait for Dial tone</b> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Line#2 Wait Dialtone</b>  <input checked="" type="checkbox"/> ENABLE         </div>	<input checked="" type="checkbox"/> ENABLE ->Default <input type="checkbox"/> DISABLE	Same as Line#1.

Command Menu/Dialer-Config/Telephone Line <b>5.Number of retries</b>	<b>Number of Retries:</b> 06	Set the number of retries for both line#1 and line#2. This function lets the dialer retry on either line if it is busy or not available. If the retry count expires, the panel reports a line trouble.
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**Command Menu-->Dialer-Config**

**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

**Report Options****-Report Options-**

1. Alarm Prio.
2. Trouble Prio.
3. Supv. Prio
4. Aux Dis Report

Command Menu/Dialer-Config/Report Options <b>1. Alarm Report priority</b>	<b>Alarm Report Prio:</b> <input checked="" type="checkbox"/> Account 1	[X] Account 1->Default [ ] Account 2 Use this function to set the account priority for reporting alarms. If the priority is set for account#1 then the dialer will try account#1 first for reporting.
Command Menu/Dialer-Config/Report Options <b>2.Trouble priority</b>	<b>Trouble Report Prio:</b> <input checked="" type="checkbox"/> Account 1	[X] Account 1->Default [ ] Account 2 Use this function to set the account priority for reporting trouble. If the priority is set for account#1 then the dialer will try account#1 first for reporting.
Command Menu/Dialer-Config/Report Options <b>3. Supervisory priority</b>	<b>SUPV Report Prio:</b> <input checked="" type="checkbox"/> Account 1	[X] Account 1->Default [ ] Account 2 Use this function to set the account priority for reporting supervisory troubles. If the priority is set for account#1 then the dialer will try account#1 first for reporting.

Command Menu/Dialer-Config/Report Options <b>4. Aux Disc Alm/Supv Rpt.</b>	<input type="checkbox"/> ENABLE <input checked="" type="checkbox"/> DISABLE ->Default	If this function is enabled, the Aux Disconnect feature (obtained by pressing the Aux Disconnect button) will block the alarm and supervisory events from being reported through the built-in dialer.
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**Command Menu-->Dialer-Config**

**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

**Time Parameters****-Time Parameter-**

- 1. AC-Loss Delay**
- 2. Cellphone Date**
- 3. Auto-Test Time**

Command Menu/Dialer-Config/Time Parameter <b>1. AC Loss delay</b>	0 ->Default The AC loss delay ranges from 0 to 20 hours	Use this function to delay the reporting of AC loss trouble on the dialer for the programmed time period. Press UP or DOWN button to increase or decrease the number of hours.
Command Menu/Dialer-Config/Time Parameter <b>2. Cellular report date</b>	0 ->Default The cellular report date ranges from 0 to 28	Use this function to set the test report date for the cell phone setup. If the date is set to 0, this means there is no test reporting for cell phone or the phone line is a regular line. Other settings could be anywhere from 01-28, representing which day of the month the test should be performed. Press the UP or DOWN buttons to scroll through the days.
Command Menu/Dialer-Config/Time Parameter <b>3. Auto test time</b>	00:30 ->Default	Use this function to set the time for auto test. This test has to be performed once a day to send the test report to the monitoring station. The time is in 24hr format, which means 00:30 is 30 minutes after midnight. Press the UP or DOWN buttons to increase or decrease the time.  <b>Please do not use the following test times: 00:00, 01:55, 02:00 and 03:00.</b>

**Command Menu-->Dialer-Config**

**Note:** Refer to *How to Use the Keypad to Program the MR-2320* on page 34 for detailed instructions on making menu selections.

**Dialer Enable/Disable**

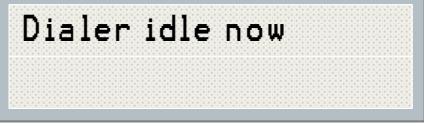
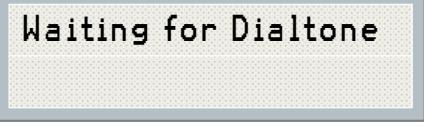
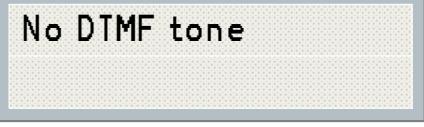
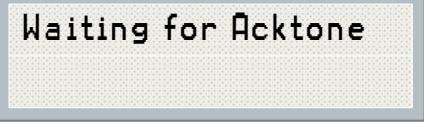
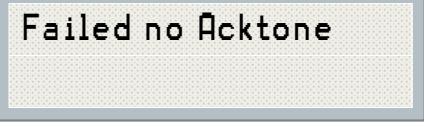
<b>Dialer Ena/Dis</b> <input checked="" type="checkbox"/> <b>ENABLE</b>	<input checked="" type="checkbox"/> <b>ENABLE</b> ->Default <input type="checkbox"/> <b>DISABLE</b>	<p>The dialer is enabled by default. When the dialer is enabled or disabled, a warning message appears.</p> <p><b>Warning:</b> The dialer cannot report any event to the monitoring station if it is disabled.</p>
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**7. Test Dialer (Command-Menu)**

<b>-Dialer Test-</b> 1. L#1 Manual test 2. L#2 Manual test 3. Reset Dialer	
<b>L#1 Manual test</b>	Press Enter to test Line #1. Press Cancel to exit this menu. For a description of test messages, see <i>Dialer Test Messages</i> on the following page.
<b>L#2 Manual test</b>	Press Enter to test Line #2. Press Cancel to exit this menu. For a description of test messages, see <i>Dialer Test Messages</i> on the following page.
<b>3. Reset Dialer</b>	This feature flushes all reportable events from the buffer. Press Enter to reset the dialer. Press Cancel to exit this menu.

## Dialer Test Messages

The following messages will display during the test processes of Lines #1 and #2. The messages that will appear depend on the status of the dialer and the test results that are found.

	The dialer is checking the line for voltage. This message automatically displays when Manual Test is selected.
	No DC line voltage. The line is dead or no phone line is connected.
	The dialer is waiting for a dial tone.
	This message may indicate a noisy telephone line.
	The dial tone was received and telephone number dialing is in process.
	This message indicates that the dialer failed to send a DTMF tone.
	Waiting for availability of the receiver. The receiver confirms the availability by sending an ack tone.
	This message indicates that either the telephone number may be wrong or the receiver is not available.
	When sending events to the receiver, the display will toggle between this message and "Waiting for Kissoff" for all events sent.
	The dialer is waiting for the kissoff tone. The kissoff tone indicates that the receiver has received the event reports.

No Kissoff	No Kissoff means receiver has not received any event reports.
Passed: Manual Test	The line passed the test; everything is OK.

## 8. Exit (Command-Menu)

Pressing, “ENTER” after selecting “Exit” from the menu will return the panel to normal LCD operation.

# Operating the Panel

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## Panel Operation During Various Hazard States

The escalating hazard zone states include Idle, Alert, Alarm and Release. They are defined based on the status of Hazard Area input zone(s), correlated Abort Switch and Manual Release Switch.

### Hazard Idle

- No correlated alarm zone active.
- Release Timer is not started.
- Manual Release Delay Timer is not started.
- Abort Switch is off.
- Manual Release Switch is off.
- Corresponding NAC circuit is off.
- Releasing circuit(s) is off.

### Hazard Alert (or equivalently first Alarm in Cross-zoned Application)

- The panel enters the Hazard Alert state when
  - a single alarm comes in for a cross-zoned hazard. For non cross-zoned hazard area, a single alarm will put hazard into Hazard Alarm state directly.
  - the Abort Switch becomes active during Hazard Alarm state, so that the hazard area state downgrades from Hazard Alarm to Hazard Alert.
- Release Timer is not started.
- Manual Release Delay Timer is not started.
- Correlated NAC circuit(s) turns on at alert rate.

### Hazard Alarm (pre-discharge, or equivalently second Alarm in Cross-zoned Application)

- The panel enters the Hazard Alarm state when
  - it detects the confirming alarm for hazard area (single alarm active for the non cross-zoned system, or 2nd alarm active in the cross-zoned system), or
- Manual Release Switch is active.
- Release Timer (RT) is started when the panel enters Hazard Alarm state after by detecting the 2nd alarm in cross-zoned hazard or 1st alarm in non cross-zoned hazard.
- Manual Release Delay Timer is started when the panel enters Hazard Alarm state by detecting the correlated Manual Release Switch active.
- Releasing circuit(s) will be activated after the Release Timer or Manual Release Timer expires.
- Corresponding NAC(s) turns on at alarm rate.
- During Hazard Alarm State, when the release timer is running and the Abort Switch turns on, the hazard area state will change from Hazard Alarm to Hazard Alert. Release Timer is held and the corresponding NAC sounds the Alert rate. If the Abort Switch is released, the hazard state will go back to Hazard Alarm and the Release Timer resumes running. The value of release timer depends on Abort Delay Type. The corresponding NAC sounds Alarm rate again.

### Hazard Release

- Panel enters Hazard Release when the Release Timer or Manual Release Timer expires. The correlated releasing circuit is activated.
- NAC code for Hazard Release state is steady.

## General Panel Operation

- Activation of Manual Release Switch starts the Manual Release Delay Timer. The expiration of Manual-release Delay Timer (MDT) activates the releasing circuits consequently. Manual Release Switch overrides the Abort Switch always and Manual-release Timer (MDT) always overrides Release Timer (RT).
- When the manual release switch is active and the panel is in the Hazard Alarm (pre-discharge) state, Abort Switch cannot override the Manual Release Switch. Only the System Reset key can interrupt and reset the panel and hazard area.
- System Reset will reset all circuits, including releasing circuits.
- The supervisory circuit can be optionally indicated on NAC-2 circuit. The NAC code of supervisory circuit should be different from those of Hazard Alert or Hazard Alarm. By default, when the NAC code for Hazard Alert is Temporal, the NAC code for supervisory circuit is 20 BPM or vice versa. This configuration change is automatically done by the panel. If NAC code for alert is chosen other than 20 BPM and Temporal, Supervisory NAC code will remain unchanged during the configuration.
- In some pre-programmed modes, the Alert Rate and the Alarm Rate are configured the same. So the action of Abort Switch does not change the NAC rate.
- AB/MR is the combination of Manual Release Switch and Abort Switch in the Agent Release panel. Short condition means Manual Release active. Current Limit means Abort Switch active.
- To avoid the conflict of different NAC code on the same circuit, the priority of signals are defined as, Water-flow alarm has the highest priority, then hazard cadence. The supervisory signal has the lowest priority.
- Soak Timer sets the time period how long the releasing circuits should be active. Upon the expiration of soak timer, the releasing circuits will be shut off. Setting of 0 second means the releasing circuits will be turned on without timer running. They will be shut off upon system reset.
- Abort function is not applicable in pre-action and deluge application.

# Pre-Programmed Modes

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## Mode 1: Agent Release, Single Hazard, Cross-zoned, Combined Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	WF	Sup	AB	MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady	X	X	X			X				
<b>Out2</b>	Signal	Escalating			X	(X)		X	X			
<b>Out3</b>	Rel.	Releasing						X			X	
<b>Out4</b>	Rel.	Releasing						X			X	
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>								X				
<b>RLS Tmr 1 Cancelled</b>								X				
<b>RLS Tmr 2 Started</b>												
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, Cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, Cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory (Non-latching by default)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release Switch
- NAC-1: Signal, will be on steady if there is any alarm zone or manual release switch active.
- NAC-2: Signal, indicates the cadence of hazard area 1 state or supervisory circuit (optional).
- RAC-1: Releasing Circuit (Hazard Area 1)
- RAC-2: Releasing Circuit (Hazard Area 1)

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

## NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: 120 BPM
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

## How the Panel Works in Mode 1

- Activation of either Z-1 or Z-2 turns NAC-1 on steady. Hazard Area 1 state changes from Idle into Alert. NAC-2 turns on at Temporal.
- Activations of both Z-1 and Z-2 change the Hazard Area 1 state from Alert into Alarm. NAC-1 turns on steady. NAC-2 turns on at 120BPM. Release timer-1 (RT-1) is started.
- Expiration of Release Timer-1 changes Hazard Area 1 state to Release. Both RAC-1 and RAC-2 turn on. NAC-2 sounds steady.
- Activation of Z-6 in any situation changes Hazard Area 1 state into Alarm. NAC-1 turns on steady, NAC-2 turns on at 120BPM. The manual release delay timer 1 (MDT-1) is started. Upon the expiration of MDT-1, Hazard Area 1 state changes to Release. RAC-1 and RAC-2 are activated. NAC-1 and NAC-2 turns on steady.
- When Hazard Area 1 state is in Alarm, if Z-5 is pressed, Release Timer-1 is held and NAC-2 rate changes from 120BPM to Temporal. After releasing of Z-5, Release Timer-1 resumes running and NAC-2 goes back to 120BPM. Release Timer -1 value depends on Abort Delay Type.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if enabled.

## Mode 2: Agent Release, Single Hazard, Not Cross-zoned, Combined Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	WF	Sup	AB	MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady	X	X	X			X				
<b>Out2</b>	Signal	Escalating			X	(X)		X				
<b>Out3</b>	Rel.	Releasing						X			X	
<b>Out4</b>	Rel.	Releasing						X			X	
<b>RLS TMR 1 Started</b>			X	X								
<b>RLS Tmr 1 Interrupted</b>							X					
<b>RLS Tmr 1 Cancelled</b>								X				
<b>RLS Tmr 2 Started</b>												
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Water-flow or pressure switch)
- Detection Zone -4: Supervisory (default non-latching)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC-1: Signal, will be on steady if there is any alarm zone or manual release switch active.
- NAC-2: Signal, indicates the cadence of hazard area 1 state or supervisory circuit (optional).
- RAC-1: Releasing Circuit (Hazard Area 1)
- RAC-2: Releasing Circuit (Hazard Area 1)

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: Temporal
  - Hazard Release: Steady
- Default NAC code of Supervisory Signal is 20 BPM.

## How the Panel Works in Mode 2

- Activation of either Z-1 or Z-2 turns NAC-1 on steady.
- Activation of either Z-1 or Z-2 changes the Hazard Area 1 state from Idle into Alarm directly. NAC-1 turns on steady. NAC-2 turns on Temporal. Release Timer-1 is started.
- Expiration of Release Timer-1 activates both RAC-1 and RAC-2. NAC-1 and NAC-2 turn on steady.
- Activation of Z-6 starts Manual-release Timer 1 (MDT-1) in any situation. NAC-1 turns on steady. NAC-2 turns on Temporal. Upon the expiration of MDT-1, RAC-1 and RAC-2 turn on.
- During Hazard Alarm state, if Z-5 is pressed, Release Timer-1 is held. After releasing of Z-5, Release Timer-1 resumes running and Release Timer value depends on Abort Delay Type.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if enabled.

### Mode 3: Agent Release, Dual Hazard, Cross-zoned, Split Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	Alm	Alm	AB/MR	AB/MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady					X		X			
<b>Out2</b>	Signal	Escalating							X		X	
<b>Out3</b>	Rel.	Releasing					X					X
<b>Out4</b>	Rel.	Releasing							X			X
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>							X					
<b>RLS Tmr 1 Cancelled</b>							X					
<b>RLS Tmr 2 Started</b>										X		
<b>RLS Tmr 2 Interrupted</b>									X			
<b>RLS Tmr 2 Cancelled</b>									X			

#### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, Cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, Cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, Cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, Cross-zoned)
- Detection Zone -5: Abort/Manual Release Combination (Hazard Area 1)
- Detection Zone -6: Abort/Manual Release Combination (Hazard Area 2)
- NAC -1: Escalating Signal, indicates Hazard Area 1 state
- NAC -2: Escalating Signal, indicates Hazard Area 2 state
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

#### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

#### NAC Configuration

Default Escalating NAC code of Hazard Area State:

- Hazard Idle: Off
- Hazard Alert: Temporal
- Hazard Alarm: 120 BPM
- Hazard Release: Steady

### How the Panel Works in Mode 3

- Activation of either Z-1 or Z-2 changes Hazard Area1 state from Idle into Alert. NAC-1 turns on at Temporal.
- Activations of both Z-1 and Z-2 change Hazard Area1 state from Alert into Alarm. NAC-1 turns on at 120BPM. Release timer-1 is started.
- Upon the expiration of Release Timer-1, RAC-1 is activated. NAC-1 turns on steady.
- Short on Z-5 indicates Manual Release Switch active. Manual Release Delay Timer 1 (MDT-1) is started. NAC-1 turns on at 120 BPM while this timer is running. Upon the expiration of MDT-1, NAC-1 turns on steady and RAC-1 is activated.
- A current limit on Z-5 means Abort Switch active. Hazard Area 1 state changes from Alarm to Alert. Release Timer is held and NAC-1 changes from 120BPM to Temporal.
- Removal of the current limit on Z-5 means that Abort Switch is released. Hazard Area 1 state changes from Alert to Alarm. Release Timer -1 resumes running and NAC-1 goes back to 120BPM. Release Timer-1 value depends on Abort Delay Type.
- Activation of either Z-3 or Z-4 changes Hazard Area 2 state from Idle into Alert. NAC-2 turns on at Temporal.
- Activations of both Z-3 and Z-4 turn the Hazard Area 2 state from Alert into Alarm. NAC-2 turns on at 120BPM. Release timer-2 is started.
- Upon the expiration of Release Timer-2, RAC-2 is activated. NAC-2 turns on steady.
- Short on Z-6 indicates Manual Release Switch active. Manual Release Delay Timer - 2(MDT-2) is started. NAC-2 turns on at 120 BPM while this timer is running. Upon the expiration of MDT-2, NAC-2 turns on steady and RAC-2 is activated
- A current limit on Z-6 means Abort Switch active. Hazard Area 1 state changes from Alarm to Alert. Release Timer -2 is held and NAC-2 changes from 120BPM to Temporal.
- Removal of the current limit on Z-6 means Abort Switch is released. Hazard Area 1 state changes from Alert to Alarm. Release Timer -2 resumes running and NAC-2 goes back to 120BPM. Release Timer-2 value depends on Abort Delay Type.

## Mode 4: Agent Release, Dual Hazard, Not Cross-zoned, Split Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	Alm	Alm	AB/MR	AB/MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady	X	X			X					
<b>Out2</b>	Signal	Escalating			X	X		X				
<b>Out3</b>	Rel.	Releasing					X				X	
<b>Out4</b>	Rel.	Releasing						X				X
<b>RLS TMR 1 Started</b>			X	X								
<b>RLS Tmr 1 Interrupted</b>							X					
<b>RLS Tmr 1 Cancelled</b>							X					
<b>RLS Tmr 2 Started</b>				X	X							
<b>RLS Tmr 2 Interrupted</b>								X				
<b>RLS Tmr 2 Cancelled</b>								X				

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -5: Abort/Manual Release Combination (hazard 1)
- Detection Zone -6: Abort/Manual Release Combination (hazard 2)
- NAC -1: Escalating Signal, indicates Hazard Area 1 state
- NAC -2: Escalating Signal, indicates Hazard Area 2 state
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Default Soak Timer Value: 0 seconds

### NAC Configuration

Default Escalating NAC code of Hazard Area State:

- Hazard Idle: Off
- Hazard Alarm: Temporal
- Hazard Release: Steady

### How the Panel Works in Mode 4

- Activation of either Z-1 or Z-2 changes Hazard Area1 state from Idle to Alarm. NAC-1 turns on at Temporal. Release Timer-1 is started.

- Upon expiration of Release Timer-1. RAC-1 is activated. NAC-1 turns on Steady.
- A current limit on Z-5 means Abort Switch active. Release Timer-1 is held. NAC-1 turns on at Temporal. Removal of the current limit on Z-5 means that Abort Switch is released. Release Timer -1 resumes. Release Timer value depends on Abort Delay Type.
- Short on Z-5 indicates Manual Release active. Manual Release Delay Timer - 1 (MDT-1) is started. NAC-1 turns on at Temporal. Upon the expiration of MDT-1, NAC-1 turns on steady and RAC-1 is activated.
- Activation of either Z-3 or Z-4 turns the Hazard Area 2 state from Idle into Alarm. NAC-2 turns on at Temporal. Release timer-2 is started.
- Upon expiration of Release Timer-2, RAC-2 is activated. NAC-2 turns on steady.
- A current limit on Z-6 means Abort Switch active. Release Timer -2 is held. Removal of the current limit on Z-6, means releasing Abort Switch. Release Timer -2 resumes running. Release Timer 2 value depends on Abort Delay Type.
- Short on Z-6 indicates Manual Release active and Manual Release Delay Timer - 2(MDT-2) is started. NAC-2 turns on at Temporal. Upon the expiration of MDT-2, NAC-2 turns on steady and RAC-2 is activated.

## Mode 5: Pre-action/Deluge, Single Hazard, Cross-zoned, Combined Release

			Detection Zones						Phantom Zones	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	RT1 Exp
			Alm	Alm	Alm	Alm	Supv	WF	Z1+Z2+Z3+Z4	
<b>Out1</b>	Signal	Steady	X	X	X	X		X		
<b>Out2</b>	Signal	Escalating					(X)	X		
<b>Out3</b>	Rel.	Releasing								X
<b>Out4</b>	Rel.	Releasing								X
<b>RLS TMR 1 Started</b>									X	
<b>RLS Tmr 1 Interrupted</b>										
<b>RLS Tmr 1 Cancelled</b>										

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow Alarm.
- NAC -1: Signal, will be activated if there is any alarm zone active.
- NAC -2: Escalating Signal, indicates Hazard Area 1 status, Supervisory Optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: 120 BPM
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

### How the Panel Works in Mode 5

- Activation of Z-1, Z-2, Z-3 or Z-4 changes Hazard Area 1 state from Idle to Alert. NAC-1 turns on steady. NAC-2 sounds Temporal.
- Activations of any two of Z-1, Z-2, Z-3 and Z-4 change Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-2 turns on at 120 BPM. Upon the expiration of Release Timer 1, both RAC-1 and RAC-2 turn on. NAC-1 and NAC-2 turn on Steady
- Activation of Z-6 turns on both NAC-1 and NAC-2 steady.
- Activation of Z-5 is indicated on NAC-2 at 20 BPM, if configured.

## Mode 6: Pre-action/Deluge, Single Hazard, Not Cross-zoned, Combined Release

			Detection Zones						Phantom Zones	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	RT1 Exp
			Alm	Alm	Alm	Alm	Supv	WF	Z1+Z2+Z3+Z4	
<b>Out1</b>	Signal	Steady	X	X	X	X		X		
<b>Out2</b>	Signal	Escalating					(X)			
<b>Out3</b>	Rel.	Releasing								X
<b>Out4</b>	Rel.	Releasing								X
<b>RLS TMR 1 Started</b>			X	X	X	X				
<b>RLS Tmr 1 Interrupted</b>										
<b>RLS Tmr 1 Cancelled</b>										

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Signal, steady on any alarm.
- NAC -2: Supervisory optional.
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 1)

### Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: Temporal
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

### How the Panel Works in Mode 6

- Activation of any one among Z-1, Z-2, Z-3 and Z-4 changes Hazard Area 1 state into Alarm. Release Timer-1 is started. NAC-1 turns on at Temporal. Upon the expiration of Release Timer-1, NAC-1 turns on steady. RAC-1 and RAC-2 are activated.
- Activation of Z-5 can be indicated on NAC-2 at 20 BPM, if configured.
- Activation of Z-6 turns NAC-1 steady.

## Mode 7: Pre-action/Deluge, Dual Hazard, Cross-zoned, Split Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	Alm	Alm	Supv	WF	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady						X	X			
<b>Out2</b>	Signal	Escalating						X		X		
<b>Out3</b>	Rel.	Releasing									X	
<b>Out4</b>	Rel.	Releasing										X
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>												
<b>RLS Tmr 1 Cancelled</b>												
<b>RLS Tmr 2 Started</b>										X		
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Escalating Signal, indicates Hazard Area 1 status
- NAC -2: Escalating Signal, indicates Hazard Area 2 status
- RAC -1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

### Hazard Configuration

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: 120BPM
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

## How the Panel Works in Mode 7

- Activation of either Z-1 or Z-2 changes Hazard Area 1 state into Alert. NAC-1 turns on at Temporal.
- Activations of both Z-1 and Z-2 change Hazard Area 1 state into Alarm. Release Timer-1 is started. Upon the expiration of Release Timer-1, RAC-1 is active. NAC-1 turns on steady.
- Activation of either Z-3 or Z-4 changes Hazard Area 2 state into Alert. NAC-2 turns on at Temporal.
- Activations of both Z-3 and Z-4 changes Hazard Area 2 state into Alarm. Release Timer 2 is started. Upon the expiration of Release Timer 2, RAC-2 is active. NAC-2 turns on steady.
- Activation of Z-6 turns both NAC-1 and NAC-2 steady.
- Activation of Z-5 can be indicated on NAC-2, if enabled.

**Mode 8: Pre-action/Deluge, Dual Hazard, Not Cross-zoned, Split Release**

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	Alm	Alm	Supv	WF	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady	X	X					X			
<b>Out2</b>	Signal	Escalating			X	X			X			
<b>Out3</b>	Rel.	Releasing									X	
<b>Out4</b>	Rel.	Releasing										X
<b>RLS TMR 1 Started</b>			X	X								
<b>RLS Tmr 1 Interrupted</b>												
<b>RLS Tmr 1 Cancelled</b>												
<b>RLS Tmr 2 Started</b>				X	X							
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

**Zone Configuration**

- Detection Zone -1: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, not cross-zoned)
- Detection Zone -3: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -4: Alarm (Hazard Area 2, not cross-zoned)
- Detection Zone -5: Supervisory
- Detection Zone -6: Water-flow.
- NAC -1: Escalating Signal, indicates Hazard Area 1 status
- NAC -2: Escalating Signal, indicates Hazard Area 2 status
- RAC 1: Releasing Circuit (Hazard Area 1)
- RAC -2: Releasing Circuit (Hazard Area 2)

**Hazard Configuration**

- Default Release Timer Value: 0 seconds
- Default Manual Release Delay: 0 seconds (not used)
- Default Abort Delay Type: Standard UL (not used)
- Default Soak Timer Value: 0 seconds (continuous)

**NAC Configuration**

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Temporal
  - Hazard Alarm: Temporal
  - Hazard Release: Steady
- Default NAC code of Supervisory is 20 BPM.

## How the Panel Works in Mode 8

- Activation of either Z-1 or Z-2 changes Hazard Area 1 state into Alarm. Release Timer 1 is started. NAC-1 turns on at Temporal. Upon the expiration of Release Timer 1, RAC-1 is active. NAC-1 turns on steady.
- Activation of either Z-3 or Z-4 changes Hazard Area 2 state into Alarm. Release Timer 2 is started. NAC-2 turns on at Temporal. Upon expiration of Release Timer 2, RAC-2 is active. NAC-2 turns on steady.
- Activation of Z-6 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-5 can be indicated on NAC-2, if enabled.

## Mode 9: Agent Release, Single Hazard, Cross-zoned, NYC abort

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	WF	Supv	AB	MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady							X			
<b>Out2</b>	Signal	Escalating			X	(X)			X	X		
<b>Out3</b>	Rel.	Releasing							X			X
<b>Out4</b>	Strobe	Steady			X				X	X		X
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>								X				
<b>RLS Tmr 1 Cancelled</b>								X				
<b>RLS Tmr 2 Started</b>												
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area 1, cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC-1: Escalating Signal, indicate Hazard Area 1 status.
- NAC-2: Escalating Signal, indicate Hazard Area 1 status, Supervisory Optional.
- RAC-1: Releasing Circuit (Hazard Area 1)
- NAC-3: Silenceable Strobe.

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds
- Default Abort Delay Type: NYC
- Default Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Steady
  - Hazard Alarm: 120BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is 20 BPM

## How the Panel Works in Mode 9

- The activation of either Z-1 or Z-2 turns NAC-1 on steady.
- The activations of both Z-1 and Z-2 turn NAC-1 off and turn NAC-2 on at 120BPM. Hazard Area 1 state changes to Alarm. Release Timer-1 is started.
- Upon the expiration of Release Timer 1, RAC-1 is active. NAC-1, NAC-2 and NAC-3 turn on steady.
- If Abort Switch Z-5 is active when Release Timer-1 is running, Hazard Area 1 state changes to Alert. NAC-2 turns off and NAC-1 turns on Steady. Release Timer-1 is held.
- If Abort Switch Z-5 is released, NAC-1 turns off and NAC-2 turns on 120BPM. Release Timer resumes running. Release Timer-1's value depends on Abort Delay Type.
- Activation of Z-6 starts Manual Release Timer 1 (MDT-1). Upon the expiration of MDT-1, NAC-2 and NAC-3 turn on steady. RAC-1 is active.
- Activation of Z-4 is indicated at 20BPM on NAC-2, if configured.

## Mode 10: Agent Release, Single Hazard, Not Cross-zoned, Combined Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	WF	Supv	AB	MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady	X	X	X			X				
<b>Out2</b>	Signal	Escalating			X	(X)		X	X			
<b>Out3</b>	Rel.	Releasing						X			X	
<b>Out4</b>	Rel.	Releasing						X			X	
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>								X				
<b>RLS Tmr 1 Cancelled</b>								X				
<b>RLS Tmr 2 Started</b>												
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, not cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, not cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC -1: Signal, will be activated steady when there is any alarm zone active.
- NAC -2: Signal, indicate the Hazard Area1 status.
- RAC 1: Releasing Circuit
- RAC -2: Releasing Circuit

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds.
- Default Abort Delay Type: Standard UL.
- Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: 20BPM
  - Hazard Alarm: 60BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is Temporal

## How the Panel Works in Mode 10

- Activation of either Z-1 or Z-2 turns NAC-1 on steady.
- Activation of either Z-1 or Z-2 turns NAC-2 on at 60BPM. Release Timer-1 is started.
- Expiration of Release Timer-1 activates both RAC-1 and RAC-2. NAC-1 and NAC-2 turn on steady.
- Activation of Z-6 starts Manual Release Delay Timer -1(MDT-1). Upon the expiration of MDT-1, both RAC-1 and RAC-2 are active. NAC-1 and NAC-2 turn on steady.
- If Z-5 is active, Release Timer-1 is held and NAC-2 is downgraded from 60BPM to 20 BPM.
- Releasing of Z-5 resumes Release Timer-1 and NAC-2 goes back to 60BPM. Release Timer-1's value depends on Abort Delay Type.
- Activation of Z-3 turns both NAC-1 and NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at Temporal, if configured.

## Mode 11: Agent Release, Single Hazard, Cross-zoned, Combined Release

			Detection Zones						Phantom Zones		Release Timers	
			Z1	Z2	Z3	Z4	Z5	Z6	Zp1	Zp2	RT1 Exp	RT2 Exp
			Alm	Alm	WF	Supv	AB	MR	Z1+Z2	Z3+Z4		
<b>Out1</b>	Signal	Steady							X			
<b>Out2</b>	Signal	Escalating			X	(X)			X	X		
<b>Out3</b>	Rel.	Releasing							X			X
<b>Out4</b>	Rel.	Releasing							X			X
<b>RLS TMR 1 Started</b>									X			
<b>RLS Tmr 1 Interrupted</b>								X				
<b>RLS Tmr 1 Cancelled</b>								X				
<b>RLS Tmr 2 Started</b>												
<b>RLS Tmr 2 Interrupted</b>												
<b>RLS Tmr 2 Cancelled</b>												

### Zone Configuration

- Detection Zone -1: Alarm (Hazard Area1, cross-zoned)
- Detection Zone -2: Alarm (Hazard Area1, cross-zoned)
- Detection Zone -3: Alarm (Pressure Switch or Water-flow)
- Detection Zone -4: Supervisory (Default non-latching)
- Detection Zone -5: Abort Switch
- Detection Zone -6: Manual Release
- NAC -1: Signal, indicate the Hazard Area1 status.
- NAC -2: Signal, indicate the Hazard Area1 status.
- RAC -1: Releasing Circuit
- RAC -2: Releasing Circuit

### Hazard Configuration

- Default Release Timer Value: 60 seconds
- Default Manual Release Delay: 0 seconds
- Default Abort Delay Type: Standard UL.
- Soak Timer Value: 0 seconds (continuous)

### NAC Configuration

- Default Escalating NAC code of Hazard Area State:
  - Hazard Idle: Off
  - Hazard Alert: Steady
  - Hazard Alarm: 60BPM
  - Hazard Release: Steady
- Default NAC code of supervisory is 20 BPM

## How the Panel Works in Mode 11

- The activation of either Z-1 or Z-2 turns NAC-1 on steady.
- The activations of both Z-1 and Z-2 turn NAC-1 off and turn NAC-2 on at 60BPM. Release Timer-1 is started.
- Expiration of Release Timer-1 results in the activation of RAC-1 and RAC-2. NAC-2 turns on steady.
- If Z-5 is active, when the Release Timer-1 is running, NAC-2 turns off and NAC-1 turns on Steady. The Release Timer is held.
- If Z-5 is released, NAC-1 turns off and NAC-2 turns on 60BPM. Release Timer-1 resumes running. Release Timer value depends on Abort Delay Type.
- Activation of Z-6 starts Manual Release Delay Timer-1(MDT-1). Upon the expiration of MDT-1, RAC-1 and RAC-2 are active. NAC-2 turns on steady.
- Activation of Z-3 turns NAC-2 on steady.
- Activation of Z-4 can be indicated on NAC-2 at 20BPM, if configured.

## Appendix A: Compatible Receivers

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The dialers that are built into select models of the MR-2320 Series Pre-Action/Deluge Panels are compatible with the following Digital Alarm Communicator Receivers (DACR):

DACR Receiver Model	Protocols
SurGard MLR2 Multi-Line Receiver (ULC, ULI approved)	SIA-DCS and Ademco Contact ID
SurGard SLR Single-Line Receiver (ULC, ULI approved)	SIA-DCS and Ademco Contact ID
Osborne-Hoffman Quickalert! II Receiver (ULI approved)	SIA-DCS and Ademco Contact ID
Osborne-Hoffman OH-2000 Receiver (ULI Approved)	SIA-DCS and Ademco Contact ID
Silent Knight Model 9500 Receiver (ULI Approved)	SIA-DCS and Ademco Contact ID
Radionics Model D6500 Receiver (ULI Approved)	SIA-DCS and Ademco Contact ID
Radionics Model D6600 Receiver (ULI Approved)	SIA-DCS and Ademco Contact ID

## Appendix B: MR-2320 Compatible Devices

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**series supported synchronous horn/strobe (UL and ULC listed)**

Horn/Strobes	Maximum # of Devices
<b>Secutron</b>	
MRA-HS3-24ww	8
<b>Amseco/Potter</b>	
FHS-240-110	9
<b>System Sensor</b>	
P1224MC	5
<b>Wheelock</b>	
NS-24MCW-FW	13

**MR-2320 series supported synchronous module (UL and ULC listed)**

Sync Modules
<b>Secutron</b>
AVS44R
<b>Amseco/Potter</b>
SDM-240
<b>System Sensor</b>
MDL
<b>Wheelock</b>
DSM 12/24

**MR-2320 series compatible two-wire smoke detectors (ULC listed)**

<b>Make Model/Base</b>
<b>System Sensor</b>
1400A
2400A
1451/B401B
2451/B401B

**MR-2320 series compatible two-wire smoke detectors (UL listed)**

<b>Make Model/Base</b>	<b>Compatibility Identifier head/base</b>	<b>Rated standby current (mA)</b>
<b>System Sensor</b>		
1400	A- N/A	0.10
2400	A-N/A	0.12
1451/B401B	A-A	0.12
2451/B401B	A-A	0.12

**MR-2320 series compatible solenoids**

<b>ASCO 8210 series</b>
T8210A107 24VDC
R8210A107 24VDC
8210A107 24VDC

## Appendix C: Reporting

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### Ademco Contact-ID

#### MR-2320 Event Codes

Event Description	Event Family	Qualifier	Code	Group #	Contact #
Phone Line #1 trouble detected	Trouble	New event	1 351	00	000
Phone Line #2 trouble detected	Trouble	New event	1 352	00	000
Phone Line #1 trouble restored	Trouble	Restore	3 351	00	000
Phone Line #2 trouble restored	Trouble	Restore	3 352	00	000
Failure to report to an Account	Trouble	New event	1 354	Acct #	Acct #
Report to an Account successful	Trouble	Restore	3 354	Acct #	Acct #
Periodic (24 hr) Test Event (NORMAL)	Test	New event	1 602	00	000
Periodic (24 hr) Test Event (OFF NORMAL)	Test	New event	1 608	00	000
Manually initiated dialer test	Test	New event	1 601	00	000
Zone Fire Alarm	Alarm	New event	1 110	00	000
Zone Fire Alarm restored	Alarm	Restore	3 110	00	000
Zone Trouble detected	Trouble	New event	1 300	00	000
Zone Trouble restored	Trouble	Restore	3 300	00	000
Zone Supervisory condition	Supervisory	New event	1 200	00	000
Zone Supervisory restored	Supervisory	Restore	3 200	00	000
Waterflow	Alarm	New event	1 113	00	000
Waterflow restored	Alarm	Restore	3 113	00	000
Indicating Zone Trouble	Trouble	New event	1 320	00	000
Indicating Zone Trouble restored	Trouble	Restore	3 320	00	000
AC power lost	Trouble	New event	1 301	00	000
AC power restored	Trouble	Restore	3 301	00	000
Battery Low	Trouble	New event	1 302	00	000
Battery Low restored	Trouble	Restore	3 302	00	000
Ground Fault	Trouble	New event	1 310	00	000
Ground Fault restored	Trouble	Restore	3 310	00	000

## Security Industries Association SIA-DCS

SIA protocol does not define indicating zone troubles, but lists it as Untyped Zone Trouble/Restore.

### MR-2320 Event Codes

Event Description	Event Family	Qualifier	SIA Event Code	Parameter
Phone Line #1 trouble detected	Trouble	New event	LT	001
Phone Line #2 trouble detected	Trouble	New event	LT	002
Phone Line #1 trouble restored	Trouble	Restore	LR	001
Phone Line #2 trouble restored	Trouble	Restore	LR	002
Failure to report to an Account	Trouble	New event	RT	Acct #
Report to an Account successful	Trouble	Restore	YK	Acct #
Periodic (24 hr) Test Event (Normal)	Test	New event	RP	000
Periodic (24 hr) Test Event (Off-normal)	Test	New event	RY	000
Manually initiated dialer test	Test	New event	RX	000
Zone Fire Alarm	Alarm	New event	FA	000
Zone Fire Alarm restored	Alarm	Restore	FH	000
Zone Trouble detected	Trouble	New event	FT	000
Zone Trouble restored	Trouble	Restore	FJ	000
Zone Supervisory condition	Supervisory	New event	FS	000
Zone Supervisory restored	Supervisory	Restore	FR	000
Waterflow alarm	Alarm	New event	WA	000
Waterflow alarm restored	Alarm	Restore	WH	000
Indicating Zone Trouble (*)	Trouble	New event	UT	000
Indicating Zone Trouble restored (*)	Trouble	Restore	UR	000
AC power lost	Trouble	New event	AT	000
AC power restored	Trouble	Restore	AR	000
Battery Low	Trouble	New event	YT	000
Battery Low restored	Trouble	Restore	YR	000
Ground Fault	Trouble	New event	YP	000
Ground Fault restored	Trouble	Restore	YQ	000

## Appendix D: Specifications

<b>MR-2320 series pre-action/deluge, releasing control panel</b>	<b>MR-2306-R6 Relay adder module</b>
Digital Signal Processor (DSP) based design. Fully configurable using front panel LCD display with Password Access.	Must be connected to a listed power-limited source of supply
<b>Electrical Ratings</b>	<b>Contact rating</b> FormC/ 28VDC per contact / 1A resistive load max, zoned
<b>AC line voltage</b> 120 VAC 60Hz 1.7A /240 VAC 50 Hz 0.85 A, 10A slow blow fuse on secondary of transformer	<b>Current consumption</b> standby 0mA, alarm 80mA
<b>Power Supply Rating</b> 6.5A AC maximum @ secondary of transformer	<b>MR-2300-A Input Class A Converter module</b>
<b>Battery</b> Type: 24VDC Gel-Cell/Sealed lead acid - 10AH to 26AH	Standby 0mA / alarm 0mA
<b>Charging capability:</b> 10AH to 26AH	<b>MR-2300-NC2 Output Class A Converter module</b>
<b>Protection:</b> 10A on board (F1) slow blow micro fuse	Standby 0mA / alarm 0mA
<b>Indicating circuits</b>	<b>MR-2312-S12 Smart Relay Module</b>
2 supervised style Y (Class B) indicating circuits, configured as strobes or audibles. Terminals are labeled "SIG 1,2"	Must be connected to a listed power-limited source of supply
Power limited / Regulated 24VDC FWR / 1.7A @ 49C per circuit	<b>Contact rating</b> FormC/ 28VDC per contact / 1A resistive load max, zoned
<b>Releasing Circuit</b>	<b>Current consumption</b> standby 30mA / alarm 140mA
Power Limited/Special application 18.18-26.08VRMS/1.7A Max Terminals are labelled "SIG 3,4"	<b>MR-2306-ATW 8 Zone Remote Annunciator</b>
Max power allowed = 5A	Standby 35mA / alarm 90mA
- 1.7A (aux power unfiltered if used) - 0.5A (aux power filtered if used) - 0.3A (4-wire smoke power if used)	<b>Remote Trouble Indicator</b>
If no auxiliaries are used the max power is 5A for the indicating and the releasing circuits	Standby 35mA / alarm 35mA
<b>Current consumption</b> Standby 183mA/Alarm 318mA	<b>Polarity reversal and city tie module</b>
<b>Aux supply (non resettable)</b>	<b>City tie</b> power limited / 24VDC unfiltered / 250mA max / 14ohms trip coil
Power limited / 21.1Vdc regulated / 500mA max	<b>Polarity reversal</b> power limited / 24VDC open / 12VDC at 3.5mA / 8.5mA max (shorted)
<b>4-wire smoke supply (resettable)</b>	<b>Polarity reversal supv terminal</b> 24VDC (normal) / -24VDC (supervisory) / 0V (trouble)
Power limited/21.1VDC regulated / 300mA max	<b>Polarity reversal alarm terminal</b> 24VDC (normal) / -24VDC (alarm) / 0V (trouble)
<b>Unfiltered supply (full wave rectified)</b>	<b>Current consumption</b> standby 50mA / alarm 300mA (city tie in use) / alarm 70mA (city tie not in use)
Power limited / Regulated 24VDC FWR / 1.7A max at 49C	
Minimum Load 5mA	
<b>Auxiliary Relays (Common alarm/supv/trb/ and auxiliary second alarm)</b>	
Must be connected to a listed power-limited source of supply FormC / 28VDC / 1A max	
<b>Initiating circuit</b>	
6 supervised style B (Class B) initiating circuits, configurable. Terminals are labeled "DET". Compatibility ID "A"	<b>System Model:</b> MR-2320 Series Control Unit - Fire Alarm, for Releasing services
Power limited / 19VDC reg. / 3mA for detectors /110MVpp AC ripple / 45mA max (alarm short)	<b>System Type:</b> Local Auxiliary (using MR-2300-PR), Remote Protected Premises Station (using MR-2300-PR or MR-2320-DR/R). Central Station Protected Premises (using MR-2320-DR/R) For ULC application also use MR-2300-PR for alternate communication path.
<b>1 RS-485 Connection</b>	
For remote annunciators. Terminals are labeled "RS-485". Line impedance is 120 ohms.	<b>Type of Service:</b> A, M, WF, SS
<b>MR-2300-PRPolarity reversal city tie module (optional)</b>	<b>Type of Signalling:</b> Non-Coded
<b>MR-2306-R6 Relay Module (optional)</b>	
<b>Ground Fault Circuit</b>	
Less the 3K will generate a ground fault.	<b>Applicable Standards:</b> NFPA 12, 12A, 12B, 12, 15, 16,70,72,2001, UL-864 Rev. 9, ULC S-524, ULC S-527-99

## Appendix E: Power Supply and Battery Calculations (Selection Guide)

Use the form below to determine the required secondary power supply (batteries).

### IMPORTANT NOTICE

The main AC branch circuit connection for Fire Alarm Control Panel must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes. Refer to Appendix A on page 74 for specifications.

### POWER REQUIREMENTS (ALL CURRENTS ARE IN AMPERES)

Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
MR-2320-R	Pre-Action/Deluge and Agent Release Control Panel FIXED ELR/ ACTIVE ELR		X	0.123/ 0.092	=	0.316/ 0.292	=
MR-2320-DR	Pre-Action/Deluge and Agent Release Control Panel FIXED ELR/ ACTIVE ELR with dialer		X	0.123/ 0.100	=	0.318/ 0.300	=
MR-2300-A	Det Class A Converter Adder Module		X	0.000	=	0.000	=
MR-2300-NC2	Sig Class A Converter Adder Module--2 Circuits		X	0.000	=	0.000	=
MR-2300-PR	Polarity Reversal and City Tie Module		X	0.050	=	0.300	=
MR-2306-R6	6 Relay Adder Module		X	0.000	=	0.080	=
MR-2312-S12	12 Relay Smart Relay Module		X	0.030	=	0.140	=
MR-2306/12-ATW	Remote Annunciators		X	0.035	=	0.090	=
MR-2300T	Remote Trouble Indicator		X	0.035	=	0.035	=
Two-Wire Smoke Detectors			X	* 0.00011	=	* 0.135	=
Four-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)			X				=
Auxiliary Power Supply for Annunciators, etc.					=		=
Total currents (Add above currents)				STANDBY	(A)	ALARM	(B)

\* Assume three Initiating Circuits are in alarm.

' Use **0.084** for five minutes, 0.168 for 10 minutes and 0.5 for 5 minutes of alarm as a multiplier figure.

\* Using the 2-wire photoelectric smoke detector. See Appendix A on page 74 for other compatible smoke detectors.

**Total Current Requirement:** ALARM (B) \_\_\_\_\_ Amps. (Value obtained from column B)

**Battery Capacity Requirement:**

$$\begin{aligned} \text{Battery (AH)} = & [\text{STANDBY (A)} \text{ } \underline{\quad}] \times [(\text{24,60 or 90 Hours}) \text{ } \underline{\quad}] + \\ & ([\text{ALARM (B)} \text{ } \underline{\quad}] \times [\text{Alarm in Hr.}] \text{ } \underline{\quad}) = (\text{C}) \text{ } \underline{\quad} \text{AH} \end{aligned}$$

**Total System Current in Alarm State:** Must be 5.5 amperes or less for MR-2320 Series.

**Battery Selection:** Multiply (C) by 1.20 to derate battery.

# Warranty & Warning Information

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## Warning Please Read Carefully

Note to End Users: This equipment is subject to terms and conditions of sale as follows:

### Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure.

### System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, such as fire or other types of emergencies where it may not provide protection. Alarm systems of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some reasons for system failure include:

- *Inadequate Installation*

A Fire Alarm system must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. An inspection and approval of the initial installation, or, after any changes to the system, must be conducted by the Local Authority Having Jurisdiction. Such inspections ensure installation has been carried out properly.

- *Power Failure*

Control units, smoke detectors and many other connected devices require an adequate power supply for proper operation. If the system or any device connected to the system operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a fire alarm system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

- *Failure of Replaceable Batteries*

Systems with wireless transmitters have been designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

- *Compromise of Radio Frequency (Wireless) Devices*

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent radio signal interference.

- *System Users*

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

- *Automatic Alarm Initiating Devices*

Smoke detectors, heat detectors and other alarm initiating devices that are a part of this system may not properly detect a fire condition or signal the control panel to alert occupants of a fire condition for a number of reasons, such as: the smoke detectors or heat detector may have been improperly installed or positioned; smoke or heat may not

be able to reach the alarm initiating device, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors; and, smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building.

•*Software*

Most Secutron products contain software. With respect to those products, Secutron does not warranty that the operation of the software will be uninterrupted or error-free or that the software will meet any other standard of performance, or that the functions or performance of the software will meet the user's requirements. Secutron shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising out of, or caused by, the software.

Every fire is different in the amount and rate at which smoke and heat are generated. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector or heat detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

•*Alarm Notification Appliances*

Alarm Notification Appliances such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If notification appliances are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.

•*Telephone Lines*

If telephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also the telephone lines may be compromised by such things as criminal tampering, local construction, storms or earthquakes.

•*Insufficient Time*

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.

•*Component Failure*

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

•*Inadequate Testing*

Most problems that would prevent an alarm system from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested as required by national standards and the Local Authority Having Jurisdiction and immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

•*Security and Insurance*

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

IMPORTANT NOTE: End-users of the system must take care to ensure that the system, batteries, telephone lines, etc. are tested and examined on a regular basis to ensure the minimization of system failure.

## **Limited Warranty**

Secutron Inc. warrants the original purchaser that for a period of two years from the date of manufacture, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, Secutron Inc. shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original owner must promptly notify Secutron Inc. in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

### **International Warranty**

The warranty for international customers is the same as for any customer within Canada and the United States, with the exception that Secutron Inc. shall not be responsible for any customs fees, taxes, or VAT that may be due.

### **Conditions to Void Warranty**

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of Secutron Inc. such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by Secutron Inc.);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

## **Warranty Procedure**

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to Secutron Inc. must first obtain an authorization number. Secutron Inc. will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from Secutron management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. Secutron will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: Secutron Inc.'s liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty.

## **Disclaimer of Warranties**

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) And of all other obligations or liabilities on the part of Secutron Inc. neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

## **Out of Warranty Repairs**

Secutron Inc. will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to Secutron Inc. must first obtain an authorization number. Secutron Inc. will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which Secutron Inc. determines to be repairable will be repaired and returned. A set fee which Secutron Inc. has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which Secutron Inc. determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

**WARNING:** Secutron Inc. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

**NOTE:** Under no circumstances shall Secutron Inc. be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property.

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